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MAGAZINE OF BOTANY.

PAXTON'S

MAGAZINE OF BOTANY,

AND

REGISTER OF FLOWERING PLANTS.

"Flowers of all hue."

VOLUME THE FIFTH.

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TO HER EXCELLENCY

THE

MARCHIONESS OF NORMANBY,

WHO,

NOTWITHSTANDING THE VARIED DUTIES OF HER EXALTED STATION, BOTH IN THE WEST INDIES
AND IN IRELAND, HAS CONTRIBUTED GREATLY TO ADVANCE THE INTERESTS
OF SCIENCE BY HER ENTHUSIASTIC LOVE AND STUDY OF
PRACTICAL BOTANY,

This Fifth Volume

OF

THE MAGAZINE OF BOTANY

IS,

With the courteous permission of her Excellency,

MOST DEFERENTIALLY AND RESPECTFULLY DEDICATED,

BY

HER MOST OBLIGED AND OBEDIENT SERVANT,

JOSEPH PAXTON.

ADVERTISEMENT.

At the close of another year's labours, the author of the Magazine of Botany begs to congratulate the friends and patrons of Floriculture on the noble and talented accessions which are constantly accruing to their ranks; but, more especially, on the enlightened spirit of research and inquiry which is daily diffused and manifested, to an extent hitherto unprecedented.

The period is yet very recent, when the devotees of this delightful science were comparatively few in number, and the works written for their use presented only the uninteresting and unedifying routine of culture prescribed for the different kinds of plants. In the present age, and particularly during the past year, cultivators have exhibited an anxious desire to be furnished with something beyond the mere *dicta* of experience. Unerring scientific principles—rather than uncertain and unsatisfactory precepts—have now become the chief desiderata in the horticultural world. And although, in lauding science, we by no means undervalue experience, we rejoice now to witness these two important auxiliaries reciprocally elucidating and confirming each other as they proceed in the great work of renovating, establishing, and advancing horticultural art, and imparting additional interest to its pursuit.

In the volume which is now concluded, the author flatters himself that he has not fallen behind any of his contemporaries in the work of improvement. Attempts have been made to base the whole system of plant cultivation on the sure foundation of general science, conjoined with accurate knowledge of physiological structure and natural habits; while the details have been elaborated, and the superstructure completed, from actual and assiduous observation and experience. The continued extensive circulation of the work, and the approbation of many eminent individuals connected with the science, afford the most gratifying and convincing testimony that these efforts have been duly appreciated, and stimulate the author to pursue those inquiries, for which an unrestricted access to the most magnificent collections of plants in England offers such peculiar facilities.

The Embellishments of the present volume will be found to consist of drawings of some of the most valuable plants, both new and old, which have yet flowered in this country. Considerably more than half of these are entirely new ; and although the author possesses, perhaps, unequalled opportunities of figuring none but new plants, he prefers selecting such only as contain sufficient merit to entitle them to extensive distribution, and general and permanent esteem. For this reason, figures of many old and beautiful plants, which have become almost lost to our collections, or are little known and rarely met with, have been introduced, in the hope of again installing them in popular favour. The designs for flower-gardens, and other ornaments, will, it is hoped, prove useful in attracting public attention to these most interesting departments; and, in the ensuing volume they will be continued on a yet more liberal scale. Arrangements have likewise been completed for improving the execution of the coloured figures of plants; and it is confidently trusted, that this feature of the MAGAZINE OF BOTANY will now be brought to the highest possible perfection.

This opportunity is embraced for gratefully acknowledging the many favours the author has received in connexion with the work, and for assuring those who have hitherto patronised it, that his best energies will be unremittingly exercised in rendering it increasingly interesting and valuable.

CHATSWORTH,
December 20, 1838.

LATIN INDEX

TO

THE COLOURED FIGURES OF PLANTS.

Aconitum Chinense, 3
Æschynanthus grandiflorus, 241
Angelonia salicariæfolia, 75
Anigozanthus coccineus, 271
Antirrhinum majus caryophylloides, 55
Aotus ericoides, 51
Astelma eximium, 103

Camellia Pressii rosea, 171
Capsicum ustulatum, 197
Cattleya crispa, 5
Chilodia scutellarioides, 195
Chorizema cordata, 97
Comesperma gracilis, 145
Coryanthes macrantha, 21

Delphinium Barlowii, 265
Dendrobium densiflorum, 121
— Gibsonii, 161

Echium giganteum, 149
Epidendrum bicornutum, 245
Epimedium macranthum, 151
— violaceum, 123
Eutoca Wrangeliana, 199

Fuchsia fulgens, 221

Gesneria rupestris, 53
Gloxinia maxima, 219

Helichrysum macranthum, 247
Hemerocallis Sieboldii, 25

Illicium floridanum, 147
Impatiens scapiflora, 101

Liatris borealis, 27
Lilium lancifolium roseum, 267
— speciosum, 1
Loasa lateritia, 77

Nemophila atomaria, 99
Nuttallia grandiflora, 217

Oncidium papilio, 175

Phaius albus, 125
Physostegia imbricata, 173
Potentilla ferruginea, 223

Solanum Herbertianum, 269

Telopea speciosissima, 73
Tropæolum Jarrattii, 29
— tuberosum, 49

Vanda teres, 193
Verbena teucrioides, 243

ENGLISH INDEX

TO

THE COLOURED FIGURES OF PLANTS.

ACONITE, Chinese, 3
Æschynanthus, large-flowered, 241
Angelonia, willow-leaved, 75
Anigozanthos, scarlet, 271
Anise-seed tree, florida, 147
Aotus, Erica-like, 51
Astelma, fine, 103

Barren-wort, large-flowered, 151
— violet-flowered, 123
Butterfly plant, 175

Camellia, Press's rose-coloured, 171
Capsicum, burning, 197
Cattleya, curled-petalled, 5
Chilodia, scutellaria-like, 195
Chorizema, heart-shaped-leaved, 97
Cinquefoil, rusty-brown flowered, 223
Comesperma, slender, 145
Coryanthes, large-flowered, 21

Day Lily, Dr. Siebold's, 25
Dendrobium, dense-flowered, 121
— Mr. Gibson's, 161

Epidendrum, two-horned, 245
Eutoca, Baron Wrangel's, 199

Fuchsia, brilliant, 221

Gesneria, rock, 53
Gloxinia, largest-flowered, 219

Helichrysum, large-flowered, 247

Larkspur, Mr. Barlow's, 265
Liatris, northern, 27
Lily, showy Japan, 1
— spotted, lance-leaved, 267
Loasa, brick-red, 77

Nemophila, speckled, 99
Nightshade, Mr. Herbert's, 269
Nuttallia, large-flowered, 217

Phaius, white-flowered, 125
Physostegia, imbricated-flowered, 173

Snap-dragon, carnation-like, 55

Touch-me-not, stemless, 101
Tropæolum, Mr. Jarratt's, 29
— tuberous-rooted, 49

Vanda, cylindrical-leaved, 193
Vervain, teucrium-like, 243
Viper's Bugloss, gigantic, 149

Warratah, the, 73

WOODCUT AND COLOURED ILLUSTRATIONS.

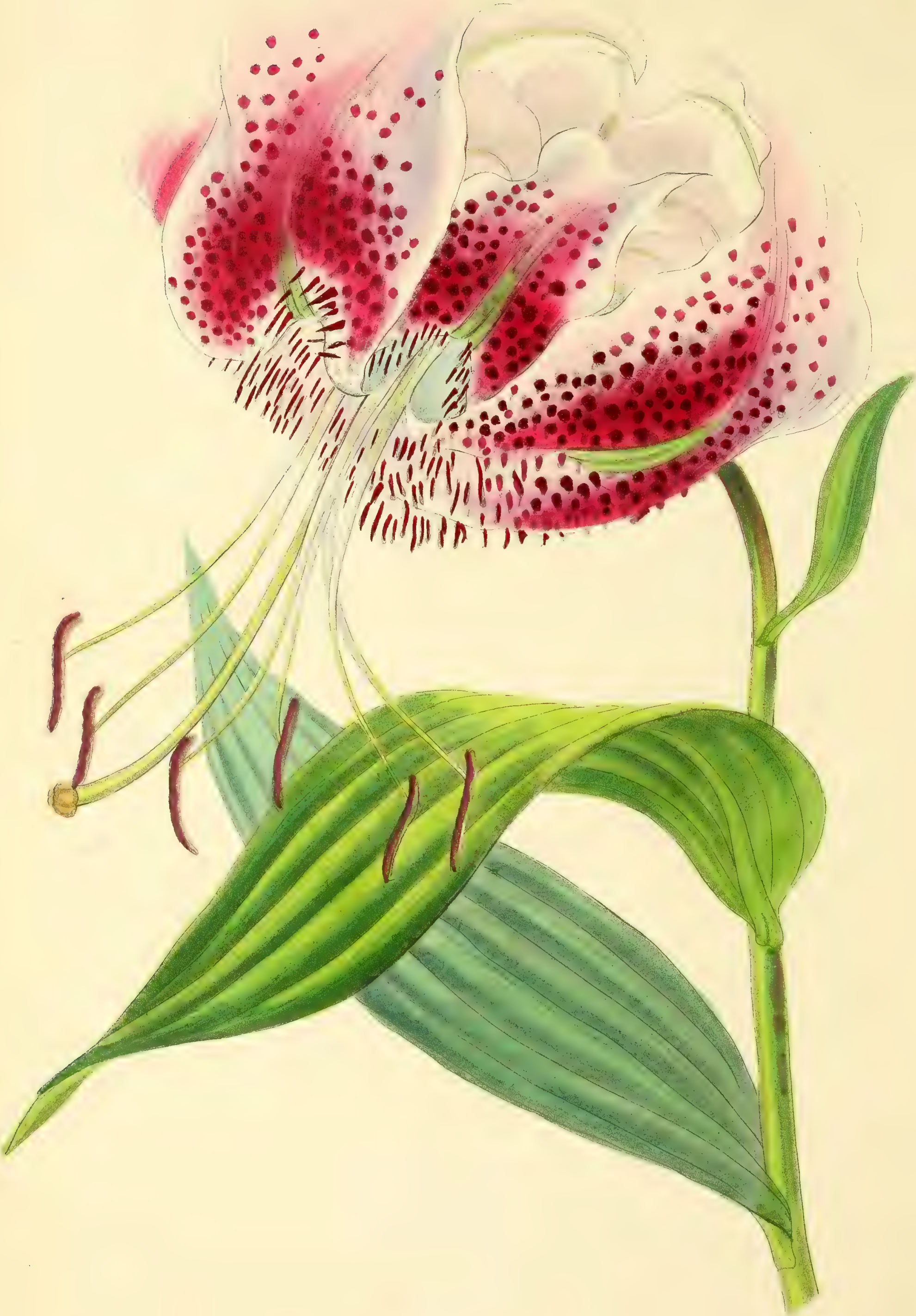
VOLUME THE FIFTH.

GARDEN STRUCTURES, DESIGNS FOR FLOWER-GARDENS, AND OTHER ORNAMENTS.

Boiler, plan of a new egg-shaped
  Front elevation, 39
  Transverse section, 39
  Longitudinal section, 39
  Plan of the furnace and lower part of the boiler, 40
  Section of boiler, with an additional flue, 40
Flower-garden, design for a, of a quarter of an acre in extent, 136
Flower-garden, ditto, ditto, 254
Flower-vase, a cast-iron ornamental, 64
Fountain, design for a dolphin, 9
Sun-dial, design for a horizontal, 41
Vase, plain Etruscan, 41
  — Grecian leaf, 41
  — Grecian moulded, 41
  — Oriental Lotus, 41

PLANTS.

Loasa lateritia, 78
Verbena teucrioides, 243



F. B. C. 1838

Lilium speciosum.

LILIUM SPECIOSUM.

(SHOWY CRIMSON JAPAN LILY.)

CLASS.	ORDER.
HEXANDRIA.	MONOGYNIA.

NATURAL ORDER.
LILIACEÆ.

Generic Character.—*Corolla* campanulate, six-parted, with a longitudinally honey-line, reflexed. *Capsules*, valves connected by a mesh of hairs.

Specific Character.—*Bulb* scaly. *Leaves* ovate-lanceolate, from three to four inches long, vernose, somewhat reflexed. *Flowers* terminal, varying in number. *Perianth* divided into six segments, of a beautiful rose-colour, richly spotted with purplish-red. *Segments* much reflexed. *Ovarium* oblong, three-celled.

A most magnificent species of lily, "not only handsome, as Dr. Lindley observes in the Botanical Register, p. 2000, beyond all we before knew in gardens (among lilies), on account of the clear, deep, rose-colour of its flowers, which seem all rugged with rubies and garnets, and sparkling with crystal points, but it has the sweet fragrance of a Petunia. The flowers are produced in August and September. Native of Japan, from whence it was introduced by Dr. Von Siebold, about the year 1833. It is a greenhouse species, and succeeds best if planted in the border in a rich compost. We saw a plant of it at Messrs. Loddiges', in September, with five flowers all expanded at once; the number of flowers was obviously occasioned by its being planted in the open border of the greenhouse; for the plant at Messrs. Rollison's, from which our drawing was taken, and which was kept in a pot, only produced one flower; however, it might doubtless flower well in a pot if it had an "*abundance of pot room*," which seems to be the most important feature in the cultivation of it. Increased by offsets.

The drawing was made in August 1837, from a plant then in flower in Messrs.

Rollison's Nursery, Tooting, where plants may be procured; also at Messrs. Loddiges', Knight's, and at Young's, Epsom.

The generic name is taken from the Celtic word Li, signifying whiteness, of which colour the lily has always been considered the emblem.

The specific name has been most appropriately given by Dr. Lindley; the plant has usually gone under the name of *L. lancifolium*, which, Dr. Lindley says, is a different species.

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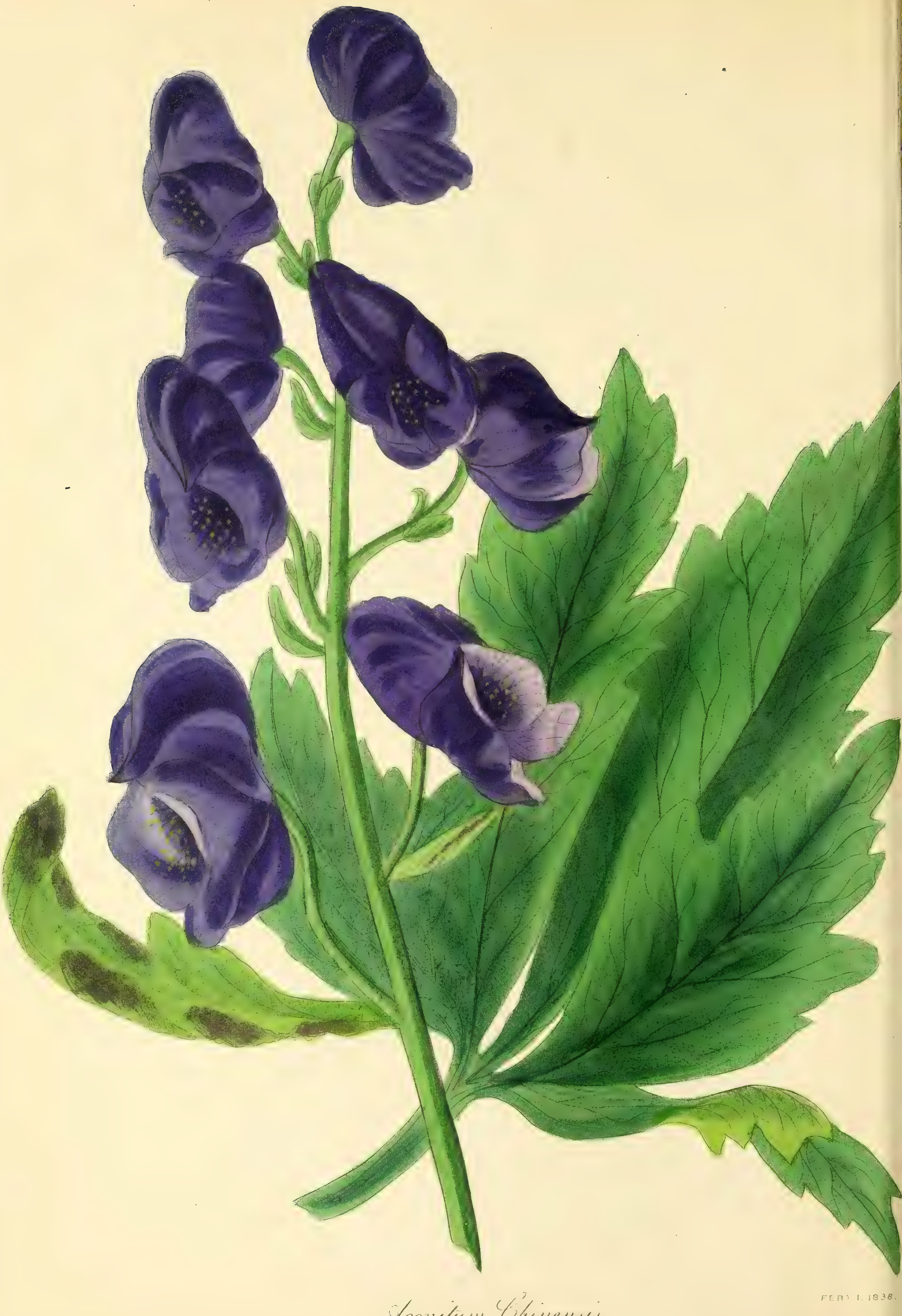


FEB^Y. 1. 1838.

Aconitum Chinensis.

ACONITUM CHINENSE.

(CHINESE ACONITE.)

CLASS.	ORDER.
POLYANDRIA.	TRI-PENTAGYNIA.

NATURAL ORDER.

RANUNCULACEÆ.

GENERIC CHARACTER.—*Calyx* of five petal-like irregular, deciduous or macescent sepals, with the upper sepal concave and helmet-shaped. *Petals* two (or hollow nectaries), hidden within the helmet on long stalks, expanded into a hollow inverted tube at the apex, drawn out at the ends into a spur, which is either straight, hooked, or twisted.—*Don's System of Gardening and Botany*, *p*. 55.

SPECIFIC CHARACTER.—*Plant* an herbaceous perennial, growing from four to five feet high. *Stem* erect, slightly branched. *Leaves* alternate, nearly sessile, partially divided into five unequal lobes, somewhat trapeziform, acute, deeply toothed, the upper surface of a deep green, assuming, when old, a purple cast, the under surface of a very light green. *Flowers* produced terminally, as well as on short lateral shoots at the axil of each leaf. *Calyx* deciduous. *Corolla* a deep blue. *Ovaries* five, many-seeded. *Root* napiform.

THIS is a new and highly ornamental species of Aconitum, said to be a native of Japan, whence it was introduced by Dr. Von Siebold, about 1833.

Messrs. Young, of Epsom, who obligingly furnished the drawing, received it from two different persons on the Continent, both giving it the same name, and affirming that it was introduced there by Dr. Von Siebold, at the same time as his Clematis, Lilies, &c. ; and from the name, it would appear that it is a native of China, not of Japan, to which latter place however China is almost contiguous.

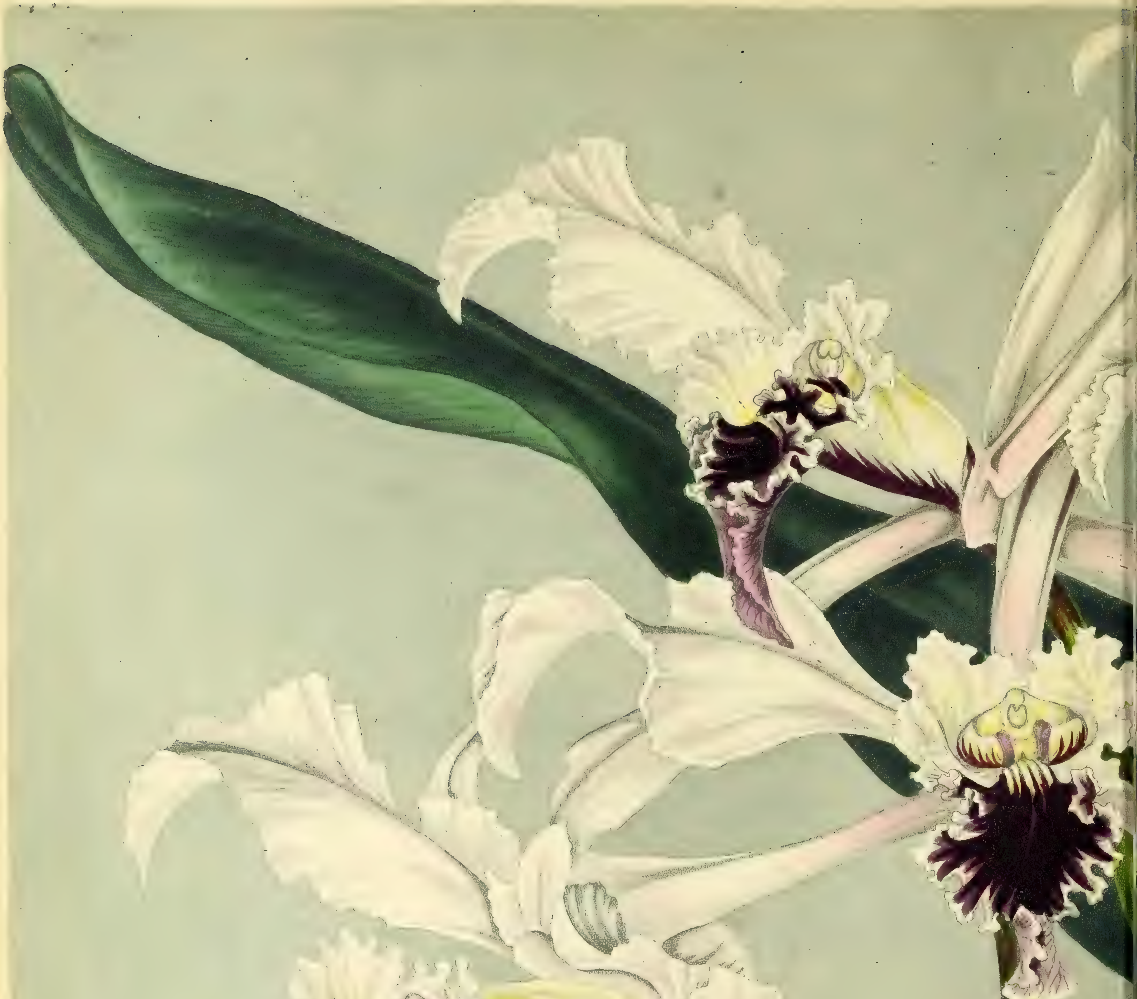
It is remarkably bold and handsome in its habits, and the flowers are very large, and of a most beautiful blue colour ; the terminal flowers expand first, and shortly after a great number of flowers are produced, from the axil of every leaf, on short lateral shoots, even down to the base of the stem, which gives it a very interesting appearance. It remains in flower about two months, and will no doubt prove perfectly hardy.

The plant from which our drawing was taken flowered with Messrs. Young, of the Epsom Nursery, in September, 1837.

It is of very easy culture, and from its ornamental character is well adapted for the flower border. It ripens seed freely, and is also easily increased by separating the roots.

The generic name is said to be derived from Acona, a town in Bithynia; some species are found plentiful there.

Poison is present in all the species, residing most powerfully in the roots.



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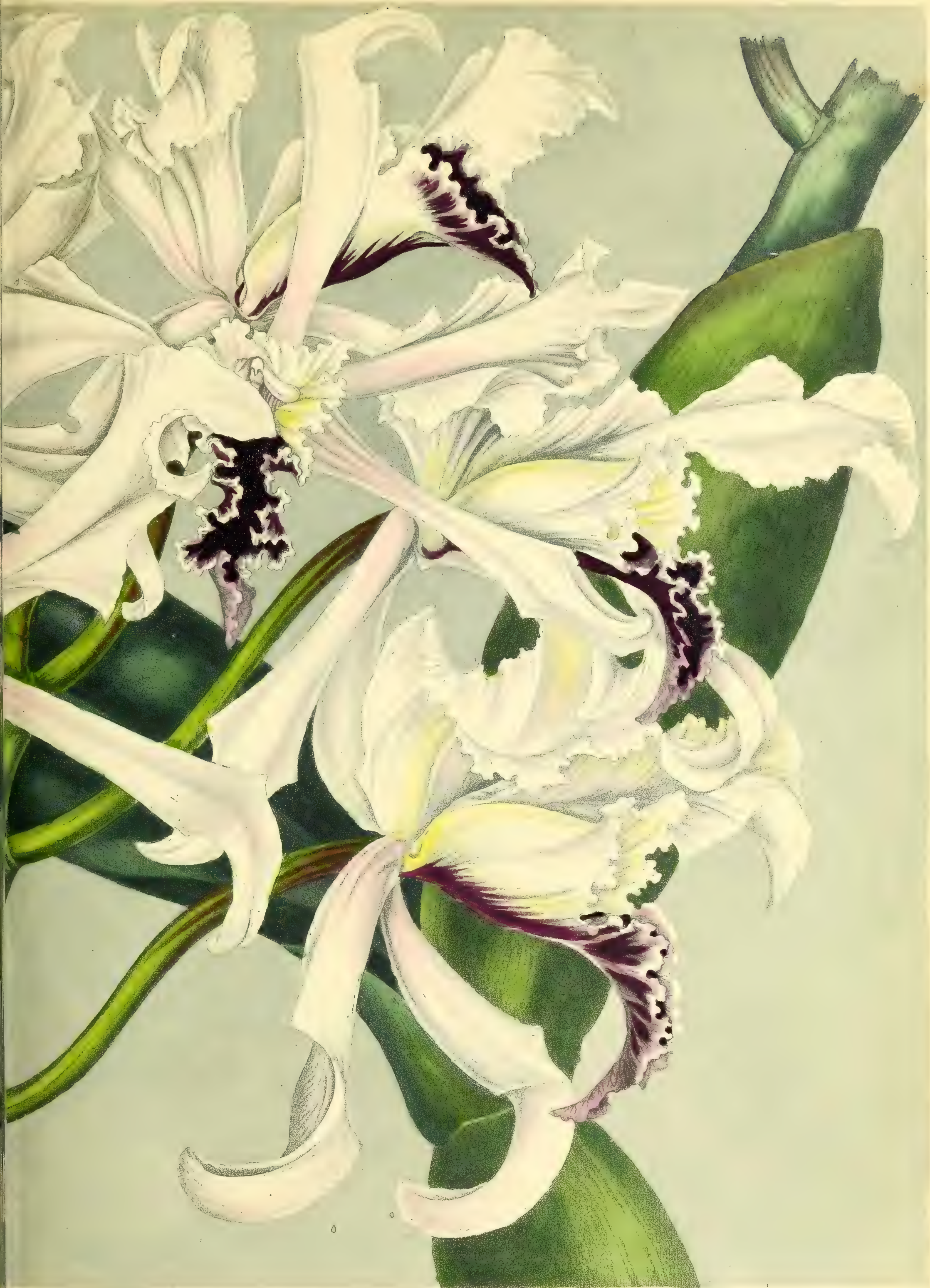
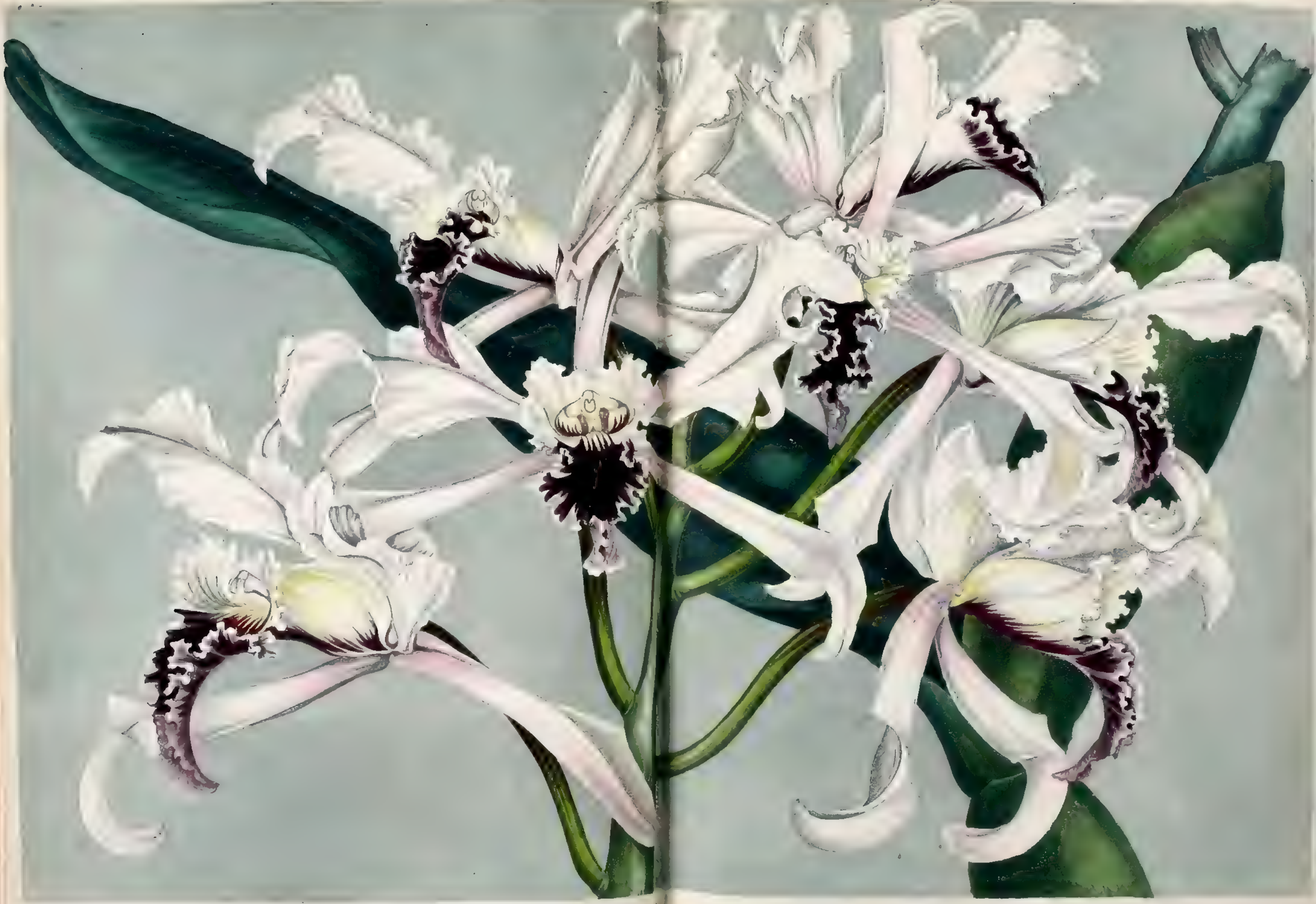


crispa.



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CATTLEYA CRISPA.

(CURLED-PETALLED CATTLEYA.)

CLASS.	ORDER.
GYNANDRIA.	MONANDRIA.

NATURAL ORDER.

ORCHIDACEÆ.

Generic Character.—See vol. i. page 151.

Specific Character.—An Epiphyte. *Stems* many, subcylindrical, slightly angular, from eight to nine inches long. *Leaves* dark green, solitary, oblong-lanceolate, notched at the end (emarginate). *Spathe* upwards of three inches long. Flower-spike arising from the crown of the stem at the axilla of the leaf, supporting three, or five, and occasionally seven, flowers. (see fig.) *Sepals* white, linear, lanceolate, acute, narrower than the petals, which are wavy (undulate) and curled at the margins, white Labellum (lip.), undivided, acuminate, curled at the edges, of a beautiful rich purple colour.

This superb specimen of *Cattleya crispa* was produced in the orchideæ-house at Chatsworth last summer, in the manner here represented; and from the unusual number of flowers produced, it may be regarded as a striking illustration of the high degree of perfection to which orchidæous plants may, and will eventually, be brought, when their habits, and the treatment they require in cultivation, become understood among the admirers of this the most beautiful, and by far the most interesting family of plants known in the vegetable world. When seen with three and four flowers on a stem, the usual number produced, it is a splendid object: but when, as in this instance, with seven, it is much more so; the fan-like arrangement of the flowers upon the stalk, the depth of richness in the velvety purple of the lip, and the snowy whiteness of the undulated petals and sepals, contrasted with the deep green of the leaves, produce a display of beauty rarely seen in the orchideæ-house.

How admirable is the beauty of these flowers! how bountiful the Almighty Hand which formed them! But

> "what know we more
> Of Thee, what need to know, than Thou hast taught,
> And bidd'st us still repeat at morn and even?

God! Everlasting Father! Holy One!
Our God, our Father, our Eternal All!
Source whence we came. and whither we return,
Who made our spirits, who our bodies made,
Who made the heaven, who made the flowery land,
Who made all made, who orders, governs all!"

It is a native of Rio Janeiro, whence it was sent, in 1826, to the London Horticultural Society, by Sir Henry Chamberlayne, Bart. Since that time many plants have been introduced, and now, although not common, it may be found in most of the leading collections, and will, ere long, doubtlessly be in the possession of every zealous cultivator in the kingdom.

The genus Cattleya is less difficult of cultivation than most growers imagine. The majority err in keeping the plants in an atmosphere too hot and humid; others, equally in the wrong, give too much water to the roots in winter, when the plant is, or ought to be, dormant. By the practice of the first, the plants grow delicate and weakly, and are unable to push flowers; while the result of the second is, rotten or greatly injured roots, so that the plant cannot make a good growth the succeeding season for want of good roots. Now as Cattleyas thrive best in a degree of heat below that required for the major part of orchidæous plants, and as they are too few in number to have a house appropriated to themselves, the best place is to set them at the coolest end of the house in which they are grown, when they will thrive and flower much finer than before.

At Chatsworth, the degree of heat given to Cattleyas, as near as we can tell, varies in the growing season from seventy to seventy-five degrees, and in the winter from sixty to sixty-five degrees. During the growing season the roots are liberally supplied with water, and the whole plant is, say once a week in fine weather, sprinkled over in the evening with a syringe or fine rose. In the winter the roots are kept nearly dry, and the top of the plant is not watered at all. It is customary, towards three or four o'clock during summer, to throw a little water on the path and flue, which renders the atmosphere moderately humid, and greatly refreshes and strengthens the plants. For further particulars on potting, &c., see vol. iv. page 122.

The drawing was taken from a plant that flowered in the orchideæ-house at Chatsworth last summer.

The generic name is explained vol. iv. page 122.

The specific name *crispa*, or curled, refers to the ringlet-like undulations of the lip.

SHRUBBERIES—(VINCA MINOR).

THERE is a class of persons whose attachment to ornamental gardening deserves the utmost degree of pleasure which it can afford, but who, from the restrictions of a limited income, or want of time, cannot keep their borders, plots, or shrubberies, in a high state of order. Sometimes, indeed, a man becomes possessed of a garden so laid out that its arrangement cannot be conveniently altered; all he has to do therefore is to make the best of his pleasure-ground, and to turn it to the utmost account.

We will presume that a sweeping narrow lawn is in front of a cottage, or neat country villa; its figure is irregular, and its extreme verge—the one most remote from the dwelling—bounded by a laurel hedge, and an irregular border; in parts very narrow, in others swelling to a plot of considerable extent—the whole, however, planted with evergreen and flowering shrubs. Now, all this, if well arranged, is extremely pretty and rural; but it is in vain to attempt the proper cultivation of flowers, annual or herbaceous, among shrubs, unless a few primroses, violets, hepaticas, and the like, be excepted. While the shrubs are young and small, the surface soil may be kept in neat and trim condition by the Dutch hoe; but time goes on, the shrubs become large; digging or hoeing is with difficulty effected; the surface becomes neglected, and dank grasses, or ugly mosses, disfigure that department which of all others is the most beautiful, if its order and keeping be thoroughly maintained. Every one who possesses a numerous acquaintance, and is in the habit of seeing many gardens, must be sure that the above picture is not overdrawn. To a country person who is his own gardener, and whose time is quite occupied, we would with all deference suggest the following hints—

Let the surface be entirely covered with some permanent evergreen of humble growth: common *ivy* will do very well, but we have selected a plant which greatly surpasses it. About the end of October, or in the middle of February, as the case may be, after trimming and pruning the shrubs, and bringing the plantation to an orderly condition, let the soil be dressed (if the material can be procured) with half-reduced screenings of leaves from forcing-houses, or with the earth of garden weeds, mixed some weeks before with about a quart of salt to the barrow-load, to prevent the germination of seeds. In default of these, any decayed littery manure, or old sawdust with sand, and some soot, will do. Three inches of some such dress forked into the soil will prepare it to receive a root of *Vinca minor*, the lesser periwinkle, in every convenient space between shrub and shrub. The plants will rarely fail to adapt themselves to the soil; and as the trailing shoots extend, roots will be developed at the joints, and thus the entire surface will become covered with a mass of never-fading verdure.

Vinca minor is a native of England; its botanical characters, according to the

English Flora of the late Sir J. E. Smith, are,—Class v. order i. *Pentandria Monogynia.* Flowers monopetalous, inferior, with numerous covered seeds, contained in "*two follicles*, erect. *Corolla* salver-shaped, oblique. *Seeds* simple." These are essential to the genus, which by Linnæus was referred to his Natural order, *Contortæ;* and by Jussieu, to *Apocineæ.*

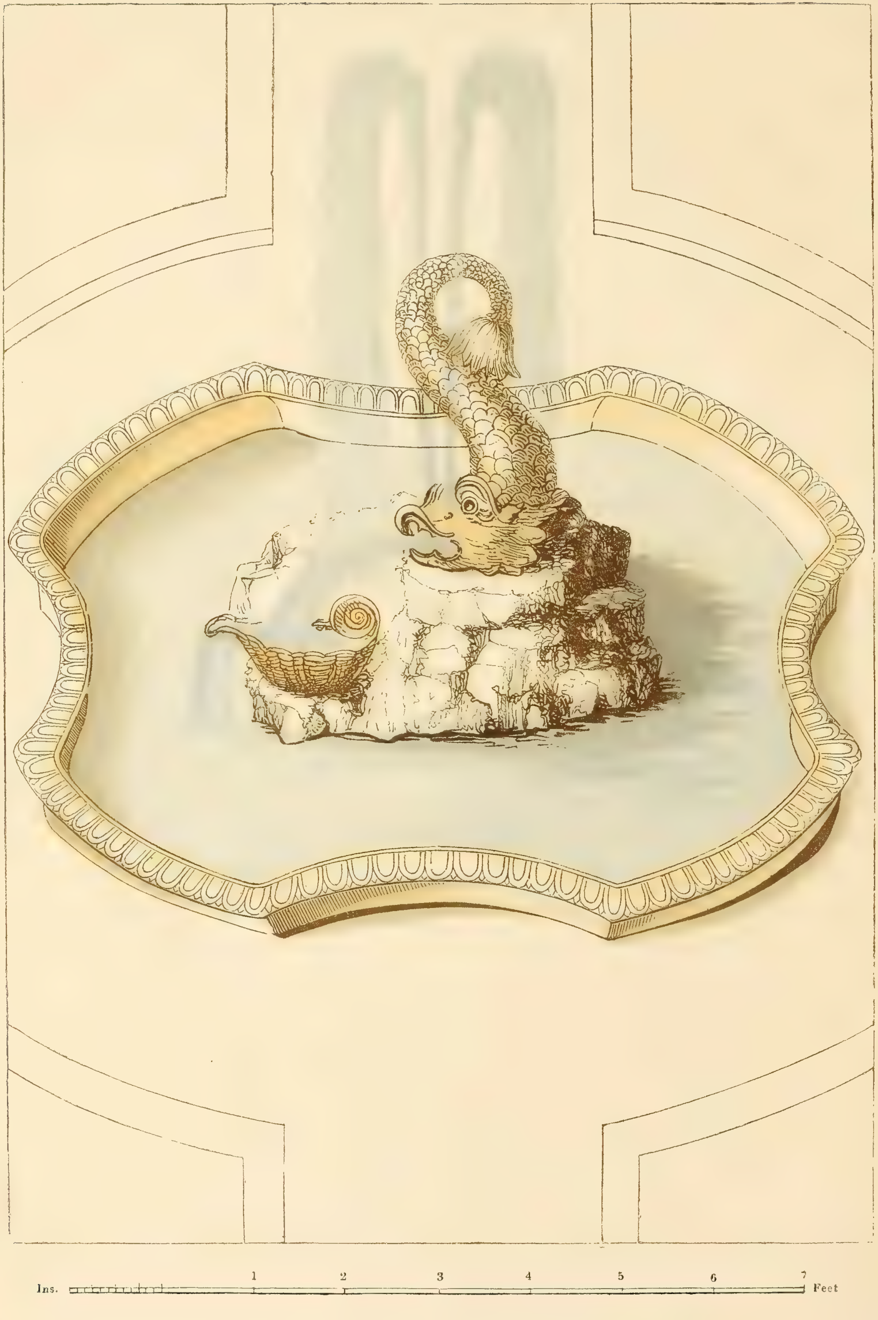
The specific character:—"Stems procumbent. Leaves elliptic, lanceolate, smooth-edged. Flowers stalked. Segments of the calyx lanceolate. Root creeping. Herb very smooth. Stems round, trailing; the flowering branches simple, leafy, erect. *Leaves* dark, shining, green, on short stalks, opposite without *stipulas.* *Flowers* solitary, an inch wide, and of a fine violet blue. *Fruit* scarcely seen in England. There is a white-flowered variety in gardens, having variegated leaves; and another with double, more purple flowers." Season *May.*

The plant is said to be found, but rarely, about hedges and banks. By Honingham Church, Norfolk, on a bank facing the south, plentifully; also in several lanes in that parish, undoubtedly wild;—Mr. Crowe. Abundant at Raleigh, Essex;—Rev. R. B. Francis. Near Rippon, Yorkshire;—Rev. James Dalton.

The foregoing were Dr. Smith's authorities.

"We found it growing abundantly in one of the woods on an eminence, near Bath, the white variety being equally plentiful as the azure; but the leaves were not variegated. The double *puce*-tinted was seen only in a garden at Frome; with us it was not a free grower. We brought home several plants of the white and blue-flowered, and on one occasion, and one only, when they flowered in the garden, a blossom or two was produced, the ground of which was a pure white, blotched with a lovely azure. The spot was purely accidental, as seven or more years have since elapsed, and each variety remains quite true to its character. This charming plant possesses every requisite to make a shrubbery complete; it creeps over and fills up every blank space, yet, though humble, it is not prostrate; bold, but unobtrusive masses of lively verdure, are quickly formed; and there, early in the year, are relieved with the numerous blossoms of white or azure, gracefully distributed among the rich foliage. When once the ground is covered, there is an end to hoeings and diggings; all the trouble required will consist in scattering a little leaf-mould, or light earth, over the plants at the approach of winter; and in occasionally curtailing the shoots, if they attempt to encroach upon the lawn or gravel walks. The *dwarf periwinkle* thrives under the closest shade of trees or shrubs, but in no degree interferes with their progress; the *China rose* will thrive and bloom in the midst of its masses, and thus add variety to beauty."

Fig. 3.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GARDEN ORNAMENTS.

Flower or pleasure gardens are susceptible of many ornaments besides those of vegetation. They are places designed expressly for the exhibition of every thing which is pleasing to the senses; forming an harmonious association of objects delightful to the eye and interesting to the mind. They are traversed by walks either in rectilinear or curvilinear directions; and whether composed of grass, gravel, or other material, they are so disposed as to be pleasing to the eye, as well as commodious to the feet. A carpet of turf is spread over the surface, whether that be level, undulating, or varied by elevated terraces, and regularly sloping banks. Every feature, whether of the plan or of its details, whether of the variety of plants or of the disposition—all must be attractive.

To heighten the effect, and give greater interest to such scenes, the art of the sculptor and architect have been employed. Italian gardens owe much of their grandeur to the works of these artists. If their gardens be divided or bounded by walls, these are highly ornamented with piers at regular distances—balustrades between, and the coping of the piers surmounted by elegant sculptured figures of various designs and devices. The area is embellished with alcoves, temples, statues, obelisks, vases, and urns. Grottoes built of or lined with fossils, petrifactions, scoria, and the common minerals, are also fit appendages to flower gardens; but of all such ornaments the *fountain* is the most common and most appropriate.

The refreshing and splendid effect of water, even in a state of rest, among beds of flowers is particularly pleasing; but to see it rising in elegant jets, sparkling in iridescent hues, and to hear its cooling murmurs in warm weather, greatly enhances the beauty and adds to the interest of the artificial scene.

The annexed plate is an isometrical view of a highly classical fountain, ornamented with figures of dolphins, large shell-rocks, and basin, with sculptured rim, suitable for the centre of a parterre, or for the front court of a public or private building.

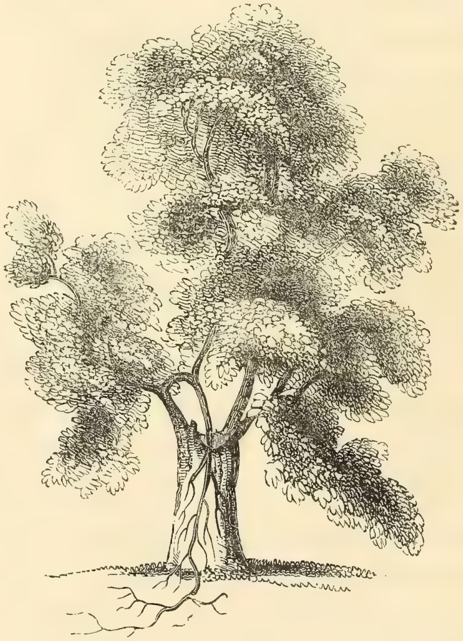
Although fountains are more suitable for warm than for cold countries, and more commonly executed in the south than in the north of Europe; yet even in this country they may be introduced in many places with good effect and at a very moderate cost. The want of fountains in London is regretted by every one who has visited France and Italy; and it is a wonder that, amidst all our metropolitan improvements, fountains have not been ere now projected for the embellishment of the larger squares, especially as a command of water from the water companies is so easily and cheaply obtained. It is true that in order to have a grand display, *forcing* machinery would be required for some situations. But as these displays would only be required in the summer months, no unnecessary waste of water would be incurred, nor any danger from frost feared.

It is said, a very costly fountain is intended to be formed in front of the new National Gallery—an excellent situation for such a work, and a most appropriate accompaniment to such a building.

There are many noblemen and gentlemen's seats in the country where fountains might be judiciously introduced as garden ornaments; and in addition to the several beautiful designs for such things heretofore given in this magazine, we shall continue to figure any others which we may think worthy of the notice of our readers.

A SINGULAR FACT CONNECTED WITH AN OAK TREE THAT GREW IN CHATSWORTH PLEASURE GROUNDS.

Sketch of a fine oak tree (see accompanying figure) that grew in Chatsworth pleasure-grounds, the top and part of the bole of which were blown off by the remarkably high wind of the 29th of December, 1798; by which it was found to be hollow, owing to a large branch having been broken or cut off at an unfavourable season for its healing over, and that occasioned internally the dry rot, when a branch bent into its trunk, and shot into roots instead of branches, as here represented, and grew down into the ground for a considerable depth. Is it not probable that in time the trunk would have decayed away, and this branch have formed a succeeding tree?



White Watson.

DECOMPOSITION OR PUTREFACTION OF VEGETABLES.

THE following extract is taken from Hugh Reid's "*Chemistry of Nature,*" lately published, a little work of great merit, calculated to be extremely useful, not only merely to those who desire to acquire some knowledge of the chemistry of natural objects, but also to those who have not the means or opportunity of prosecuting chemical experiments, and as well, highly edifying to the general reader; "containing upwards of 300 pages."

"All vegetables, when the principle of life has departed from them, begin spontaneously to be decomposed (to putrefy). The elements which enter into the composition of plants, when left entirely to the disposal of their chemical affinities, have a tendency to separate from each other, and form new compounds, very different from those which compose the living plant. This is termed the "spontaneous decomposition" of vegetables. The substances formed by the new arrangement of the elements of the vegetable are aerial and colourless;—hence the entire disappearance of the vegetable, as if it had been totally annihilated when life ceased to preserve its particles together in the vegetable form.

"The compounds formed, when the vegetable dies and putrefaction goes on, are, carbonic acid, water, carbonic oxide, and carburetted hydrogen. The two former are the chief results of the decomposition; the two latter are formed more sparingly, and principally when there is not a free supply of oxygen to the substance undergoing decomposition. The carbon and hydrogen of the plant have a constant tendency to unite with oxygen, and form carbonic acid and water. Now there is never present in the vegetable a sufficient quantity of oxygen to convert all the carbon into carbonic acid, and all the hydrogen into water; hence, if there be not a sufficient supply of oxygen to produce these compounds presented from external sources, as from the air, the two other matters are formed, one of which (carbonic oxide) requires a less quantity of carbon than the carbonic acid, while the other (carburetted hydrogen) requires no oxygen, consisting of carbon and hydrogen."

"In vegetables which decay under water, carburetted hydrogen is abundantly formed; hence arises the gas which is found so plentifully in summer in stagnant waters containing quantities of putrefying vegetables."

"The spontaneous decomposition of vegetables goes on most rapidly when they are exposed to the air, kept moist, and preserved at a degree of warmth higher than the usual temperature of the atmosphere. Putrefaction is retarded or almost prevented if the vegetable be dried, so that its own moisture is expelled, carefully excluded from air and moisture, and kept cold. The influence of heat in promoting the decay of vegetables depends upon the repulsive power it possesses, by which it disposes the various elements to assume the gaseous form. Animals and vegetables are frequently found in snow or ice, in a high state of preservation."

"Such are the changes which go on in the dead plant. That mysterious agent, Life, is able, by its peculiar power, to control and overcome the chemical attractions which tend to produce these changes, and retains these elements in that state of combination best adapted for the performance of their proper functions: at the moment, however, in which life ceases to superintend the exercise of these functions, they cease, and the chemical attractions, no longer restrained by the vital principle, obtain full sway. The carbon, oxygen, and hydrogen, formerly existing in the state of wood, bark, leaves, fruit, or seeds, obey the laws of chemistry, return to the state of carbonic acid, water, or inflammable gas, mix with the earth and atmosphere, afford nutriment to new plants, again form leaves, flowers, and all the beautiful and diversified organs of the vegetable creation—again wither and decay, and return to the soil to supply new generations, and continue the same series of unceasing revolutions."

A SUCCESSFUL METHOD OF NATURALISING NEW HOLLAND PLANTS, &c.

We trust the following remarks, the favour of a correspondent, will be useful to such of our horticultural brethren, who may be interested in the subject of acclimatising or naturalising plants:—

"Having for the last ten years annually introduced to the pleasure-ground such of my New Holland plants as I judged most ornamental, it may not prove uninteresting to notice my mode of enabling them to resist the winter. I prefer the month of March to any other, making sure that vegetation shall not take place before they are planted out; I then support each plant with four or five stakes, reaching to the top in an angular position. Thus surrounding them from bottom to top with hay-ropes,—not too close; I then cover the surface for several feet round with fine sand to prevent the frost from entering: having succeeded in this way the first winter, they fearlessly encounter every succeeding winter, and vie with our common laurels.—Amongst those alluded to the following are a few:—

Vistea Lyccoides, 6 ft. by 12 in circumference.
Hakia saligna, 8 ft.
Fuchsia arborea, 9 ft. in flower.
Laurus indica, 12 ft. by 18.
Hakea florida, 12 f.t by 20.
Cratægus glabra, 18 ft.
&c. &c. &c.

"*Ireland, October* 12*th*, 1837."

Being interested in this subject, we should be glad to receive lists of such New Holland plants, or any particulars connected with them, as have been brought with success to endure the open air.—Ed.

FIRES WITHOUT SMOKE.

An article has appeared in Blackwood's Magazine, and been copied into the Farmer's Journal, and elsewhere, which calls the public attention to what it styles, the *smoke nuisance:* from it we collect that an attempt has again been made, which promises to effect the desired object of making a fire *consume its own smoke.* We propose to offer a few pertinent remarks on this subject, but cannot refrain from previously extracting the few following lines, which refer to the philosophy of combustion.

"The perfect combustion of any inflammable substance depends upon two circumstances—the presence of a sufficient quantity of *pure air* to afford oxygen, and a degree of *heat* sufficiently high and steady, to bring about the perfect union of all the inflammable particles with oxygen."

In volume ii. of this magazine, p. 244, there is a paper on hot-houses, to which we beg to refer: the wood-cuts will exhibit the action of the smoke, and the profile of a furnace constructed originally by Mr. Witty, which had been announced with high promises. We know that such furnaces are extremely expensive in the first instance, have all but failed to obviate the nuisance of smoke, and have given little comparative or efficient heat to the flues. Now, were it possible to decompose coal in the common furnaces, and to bring the gases it yields into contact with burning and bright fuel, the hydro-carbonous matters would be ignited, and the action of the flues rendered extremely strong. In the gas-works the volatile products of coal are carried off by the process of distillation: a great quantity of water and of liquid tar are produced, and the gaseous fluids, after being purified by lime, are converted into that highly inflammable air that supplies our streets and houses with a splendour of light which they who recollect what the lighting of by-gone years was, can alone duly appreciate.

As is the *illuminating*, such also is the *heating* power of this wondrous agent. This fact we now desire to impress upon the mind of every one who contemplates improvements of heating forcing-houses without *smoke;* but shall not say more on the subject till we have paid some little attention to the improvement of ordinary fire-places.

The open furnace can never be made to furnish the same products as the close retorts of the gas works; but the more closely the action of that furnace can be made to approach that of the retort, the more efficient will its products become. At page 186 of the fourth volume, we recommended a form of grating which certainly might be rendered a great improvement. The direct object in heating a flue is to render that black smoke which lines the brickwork with soot, a medium of diffusible heat. If then every grate were constructed with a thick plate of iron in front of the bars, so as to leave a space of from five to ten inches between them and the door, it is plain that, when once that plate was heated to redness, and the coal thrown upon it, it must be acted upon by the hot iron, and made progressively to yield up its gaseous products; which, passing over the bright fire upon the bars, would become ignited. In the *Remarks on Fuel*, at page 186, there is the following passage: "A grate so constructed contains the *ignited fuel* in the part open to the ash-pit (that is, it lies upon the bars, through which the air from beneath rushes); the solid plate next the door being destined to receive the cold fuel, which thus is gradually acted upon by the hot iron from below, and by the heat reflected from the brick-work above it, till it gives forth a stream of gas, which, *passing over the burning mass beyond it*, becomes inflamed, and raises a great heat." We repeat this passage, because we are certain that, although prepared to admit the impossibility of perfectly producing pure inflammable gas *without a retort*, the plan which we adopt combines all the requisites of greatly-improved and economical fire work.

The efficiency of the apparatus is just in proportion to the degree of heat required; but all depends upon the principle of pushing forward towards the neck of the flue, the red, or rather white, hot fuel, and of always casting the cold fresh coals upon the *heated plate*, so as to induce distillation. Small grates in greenhouses, where perhaps one hour's fire may suffice, will afford no evidence of the feasibility of the operation; but large furnaces, wherein a constant fire is maintained, will demonstrate the correctness of our views.

Let the amateur weigh these suggestions, and compare the cost of a furnace so simple with that of some others, which, after an outlay of forty or fifty pounds, have led to nothing but failure and disappointment.

But we have reached our limits, and have said nothing of a method of heating the houses of large establishments, which will assuredly remove, or rather obviate, the *smoke nuisance* effectually. As it is, we will defer our observations a month longer, hoping by the delay to acquire a more extensive knowledge of facts which may convert our expectations to certainty. Our readers then must excuse us if we prefer to say nothing more till we can give a detail of the matter in full, rather than to garble or curtail it. Suffice it to observe, that we believe one single furnace would do the work of any dozen, and with a comparative reduction of fuel.

NEW AND BEAUTIFUL PLANTS

FIGURED IN LEADING PERIODICALS FOR DECEMBER AND JANUARY.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ.)

THE ASTER TRIBE (*Asteraceæ*).

Cosmus tenuifolius. Fine-leaved Cosmus. A beautiful annual Mexican plant, not unfrequently raised from imported seed, but always flowering so late in the year that it is unable to ripen seeds, and perishes. It grows from a foot and a half to two feet high, and is a most striking object when its rich purple flowers are well contrasted with the bright fennel-like leaves. It is hardly likely to be preserved over the winter. The only way to keep it in our gardens will be to raise it so early as to enable it to ripen its seeds before the close of the autumn. *Bot. Reg. for December*, 2007.

THE MALLOW TRIBE (*Malvaceæ*).

Hibiscus lilacinus. Lilac Hibiscus. A beautiful new Hibiscus with lilac-coloured flowers of a good size, obtained from seeds sent home by Sir James Stirling, and raised by Mr. Robert Mangles. Dr. Lindley thinks it will succeed in the open border in summer, but will require protection in winter. *Bot. Reg. for December*, 2009.

THE ROSE TRIBE (*Rosaceæ*).

Spiræa barbata. Bearded Meadow Sweet. This is beyond all comparison the handsomest herbaceous Spiræa yet in our gardens; for to all the pure and brilliant whiteness of *S. filipendula*, it adds the graceful plume-like appearance of the American *S. Aruncus*, discovered originally in Nepal, and since introduced to Europe by Dr. Von Siebold. In its natural state it grows from three to four feet high; the snow-white plume of flowers alone is two feet long. It will doubtless prove perfectly hardy. *Bot. Reg. for December*, 2011.

THE JASMINE TRIBE (*Jasminaceæ*).

Jasminum glaucum. Privet-leaved Jasmine. It is an old inhabitant of our gardens, but now neglected for newer favourites. Nevertheless this Jasmine is sweet, pretty, easy to cultivate, and not growing more than five or six feet high; its slender branches are particularly well adapted to be wreathed round some of those moveable trellises which gardeners now employ with so much advantage for their tender climbers. It is a native of the Cape of Good Hope, and is therefore hardy in the greenhouse, where it flowers all summer. *Bot. Reg. for December*, 2013.

THE LOBELIA TRIBE (*Lobeliaceæ*).

Lobelia heterophylla. Various-leaved Lobelia. This is a beautiful Lobelia, a native of Van Diemen's Land. The flowers are of a particularly clear rich blue, and so large as to produce a very rich and gay appearance, either when the plant is grown singly or in beds. It was sent to Dr. Lindley by Mr. Veitch, of the Mount Radford Nursery, near Exeter, with a memorandum that the plant had been hung up in the stove for more than a month without the least soil, and without ceasing to flower; this property of continuing to grow after being gathered renders it invaluable to those who grow flowers to decorate their sitting-rooms. *Bot. Reg. for December*, 2014.

THE CAMPANULA TRIBE (*Campanulaceæ*).

Campanula barbata; *var.* **cyanea.** Dark-blue bearded Bell-flower. This is a good plant, received in this country from the Imperial Botanic Gardens at Vienna. The flowers are of a deep blue; indeed the character of the whole plant is good. It is well adapted for rock-work, and thrives well in a sunny situation in dry soil. *Brit. Fl. Gar. for December*, 409.

THE PRIMULA TRIBE (*Primulaceæ*).

Dodecatheon integrifolium. Entire-leaved American Cowslip. A very distinct and beautiful species of this small genus: it was found by Mr. Drummond in the Rocky Mountains. The flowers droop, and the segments of the corolla are reflexed quite back, which look very pretty. *Bot. Mag. for December*, 3622.

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CLASS II.—PLANTS WITH ONE COTYLEDON (MONOCOTYLEDONEÆ.)

THE AMARYLLIS TRIBE (*Amaryllidaceæ*).

Sternbergia colchiciflora. Meadow Saffron-flowered Sternbergia. This is a charming little autumn-flowering bulbous plant, introduced by the Hon. W. F. Strangways; it is described as perfuming the fields of the Crimea, especially about the Bosphorus, with its fragrant jasmine-scented flowers in the months of September and October. The flowers are yellow, rise about the height of a crocus, and look very pretty. It will probably prove hardy. *Bot. Reg. for Dec.* 2008.

THE ORCHIS TRIBE (*Orchidaceæ*).

Anæctochilus setaceus. Fringed Anæctochilus. A most interesting little plant, with white and green rather inconspicuous flowers, and very handsome leaves; these latter are admirably and singularly painted with transverse yellowish lines upon a rich brown purple ground, and the leaf being of an ovate figure, renders them very conspicuous and pretty. It is said to be a native of Java, and Ceylon; but his Grace the Duke of Devonshire's collector found it in small quantities on the Khoseea Hills, from whence he brought living plants, which are thriving in great beauty in the hothouse at Chatsworth. It thrives well with the treatment of *Neottia*, *Goodyera*, and other similar terrestrial kinds. *Bot. Reg. for Dec.*, 2010.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ.)

THE GENTIAN TRIBE (*Gentianeæ.*)

Lisianthus Russellianus. Duke of Bedford's Lisianthus. An exceedingly handsome new plant, probably an annual, sent home by the lamented Douglas, from San Felipe de Austin, Texas, in 1835. The plant grows from one to two feet high, and has rich purple flowers as large as a tulip, which continue in beauty for a period of three weeks. Sir William Jackson Hooker thinks there can be no doubt but under proper management, by flowering early in the spring, and planting out in the open border, this plant will then perfect its flowers as readily as the *Phlox Drummondi. Bot. Mag. for January*, 3626.

THE CACTUS TRIBE (*Cacteæ.*)

Echinocactus tubiflorus. Tube-flowered Spine Cactus. This is a fine species, with large white flowers, from Mr. Frederic Mackie's nursery at Norwich. Its affinity with *E. Eyriesii* will be at once perceived; but from that species it differs remarkably in the flower and much deeper angles of the stem, in the very much longer and stronger and black spines, collected into fewer fascicles. The flower is larger, the tube longer and slender, and clothed with much longer tufts of hairs. It is in all probability a native of the same country as *E. Eyriesii*, namely Mexico. *Bot. Mag. for January*, 3627.

THE VERVAIN TRIBE (*Verbenaceæ.*)

Verbena incisa. Cut-leaved Melindres. Another bold and handsome South American Verbena of the Melindres group, for which we are indebted to Mr. Tweedie. The stem grows erect but weak,—three feet high, the leaves, deeply lobed and cut, especially near the base; and the flowers a fine rose crimson with a yellow eye. *Bot. Mag. for January*, 3626.

THE EVENING PRIMROSE TRIBE (*Anagraceæ.*)

Fuchsia fulgens. The glowing Fuchsia. This is a lovely plant of Mexican production, which Dr. Lindley speaks of in the following words: "It is difficult to conceive anything more brilliant than the appearance of this species, when its rich vermilion-coloured flowers are formed beneath the influence of a Mexican sun; but if it is grown in a shaded situation, with too much heat and moisture, the bright colours inevitably fade, and the plant is deprived of half its beauty. It will no doubt prove a robust shrub, of easy culture, growing freely in a mixture of loam and peat in the greenhouse: cuttings of the young wood will strike freely in sand under a bell-glass on a moderate hotbed. It is probably as hardy as *H. Arborescens*, and perhaps like that species not enough so to stand the winter, or to flower well in the open border, but it will certainly grow and flower freely in the greenhouse, and it is by no means impossible that it may even succeed in the open air in good summers, in a warm sheltered situation. *Bot. Reg. for January, New Series*, 1.

THE GESNERIA TRIBE (*Gesneriaceæ.*)

Drymonia bicolor. Two-coloured Woodwort. A West-Indian plant, of easy growth, in loam and vegetable mould in a moist stove, where it fixes itself upon the wall in great luxuriance. It is not a showy plant; the flowers are of the shape of those of a Gloxinia, and of a light colour. It does well in the atmosphere of an orchideous house, where it spreads with the rapidity of ivy on the open wall. *Bot. Reg. for January, New Series*, 4.

CLASS II.—PLANTS WITH ONE COTYLEDON (MONOCOTYLEDONEÆ.)

THE ORCHIS TRIBE (*Orchideæ*).

Maxillaria aurea-fulva. Golden-brown Maxillaria. This is certainly an interesting addition to the genus Maxillaria, the flowers having much of the colour and appearance of those of *Trigonidium obtusum*, except that the orange of the former is brighter. The plant seems to have much the appearance of *M. racemosus. Bot. Mag. for January*, 3629.

Epidendrum papillosum. Warty-fruited Epidendrum. A rich addition to the already many fine species of Epidendrum, remarkable for its warty fruit and very pretty flowers. It was discovered by Mr. Skinner. The bulbs are broadly ovate, dark-green, the scape rises one foot long, bearing a terminal raceme of eight or ten rather distant flowers. The sepals and petals are a yellowish green, the column is tipped with orange, and the lip is white with three deep pink streaks. It is of easy culture. *Bot. Mag. for January*, 3631.

Cattleya Perrinii. Mr. Perrin's Cattleya. This species is a native of Brazil, and is not unlike *C. labiata*, although inferior to it in beauty. The species has been named after Mr. Perrin, Mr. Harrison's (Aigburgh) intelligent gardener, under whose care so many fine South American Epiphytes have been for the first time brought into flower in this country. For culture, &c., see the account accompanying the plate of *C. crispa* in the present number of this magazine. *Bot. Reg. for January, New Series*, 2.

Stanhopea quadricornis. Four-horned Stanhopea. An exceedingly pretty species of Stanhopea, allied to *S. oculata*, from which it differs very obviously in the general want of spotting upon the flower, and especially in the two short horns which project from the crimson base of the lip. In some circumstances it also approaches *S. insignis*, especially in the colour and form of the sepals and petals, but the lip is altogether different. It was received by Sigismund Rucker junior, of Wandsworth, from the Spanish Main, who describes the pseudo-bulbs and leaves as extremely like those of *S. grandiflora. Bot. Reg. for January, New Series*, 5.

NOTICES OF NEW AND RARE PLANTS

IN FLOWER IN THE LEADING NURSERIES IN THE VICINITY OF LONDON.

Owing to the extreme severity of the weather during the past month (which perhaps has not been so intense cold for some years), our readers, we should think, would not be surprised when we inform them that there are very few new or interesting plants now in flower in the London nurseries. Indeed, at this period of the year, our stoves and greenhouses are generally barren of interest; and though here and there a solitary flower may occasionally develop itself, it seems rather to discover the general gloom, than to enliven the scene, and delight the eye, as at other times. To this rule, however, we may except orchideous plants; the cultivator of which has constantly some beautiful and charming plant in flower, to attract his attention and excite his admiration; and, even in the depth of winters like the present, orchideous plants wear the aspect of health and vigour, and are continually sending forth their elegant and varied blossoms, which, while they are preserved by an artificial temperature from the attacks of frost, seem to smile at all the inclemencies of the external atmosphere. Were there no other inducement to cultivate this beautiful tribe than that which is here held out, we should imagine that no person who possesses the means would any longer deprive himself of such an unfailing source of gratification and delight; and we will venture to assert, that in a tolerably good collection of orchideous plants, there is not a period of the year in which some plants of this charming tribe are not displaying their curious and interesting blossoms in the highest degree of perfection. But we proceed to notice such plants as are in flower in the various nurseries.

Messrs. Henderson's, Pine-Apple Place. Upon entering the show-house of Messrs. Henderson, we were agreeably surprised to find a most striking contrast to the external appearance of vegetation. Here are *Azaleas*, *Syringas*, *Primulas*, *Camellias*, and a great variety of other beautiful plants, all flowering in a truly splendid manner, and presenting to the eye a rich and varied mass of beauty, seldom seen at this season of the year. We notice, especially, a fine plant of one of Messrs. Henderson's, *hybrid Cinerarias;* we have before had occasion to remark that these gentlemen have raised some of the most beautiful varieties of this interesting genus we ever witnessed, and the one to which we now allude has flowers of a most brilliant blue colour, and certainly for its novelty and beauty it surpasses all others that we have previously seen, and would be a most valuable and beautiful ornament to any collection. Great praise is due to these gentlemen for the neat and elegant manner in which their greenhouse and other plants are potted, supported, and arranged.

Mr. Knight's, Chelsea. Mr. Knight has recently flowered a new stove plant, which will no doubt prove valuable; the foliage of it is pinnated, large, and hand some; the flowers are produced in clusters, and are of a rich crimson colour; they seem to be destitute of petals, and have the appearance of a bunch of beautiful, delicate, thread-like stamens; it is without doubt new, and is a very ornamental plant, and probably a climbing one. Mr. Knight has also some excellent new species of various genera of Coniferous plants, and he has recently made a new importation from New South Wales of orchideous and other plants, many of which are new, and will probably prove good and valuable.

Messrs. Loddiges', Hackney. *Cœlogyne Gardneriana.* This new and highly beautiful orchideous plant has recently flowered in the rich collection of the above gentlemen; it is an East Indian species, and was received last year from Dr. Wallich, of the Calcutta Botanical Garden, having been previously collected and sent there by Mr. John Gibson, His Grace the Duke of Devonshire's Collector. *Lœlia anceps.* This splendid plant is now beautifully in flower at the above nursery, and may be considered as one of the most lovely ornaments of the orchideæ-house. Messrs. Loddiges, likewise, have a new orchideous plant now coming into flower, the bulbs of which bear some slight resemblance to the genus *Eria;* the flower-spike is pendulous, and the flowers will be large, and of a white or cream colour; it will doubtless prove a valuable plant. *Corrœa speciosa grandiflora.* This is, we believe a new variety of this much esteemed species, and it is in every respect superior to the species to which it is allied; it is now flowering profusely in the greenhouse of the above nursery.

Mr. Low's, Clapton. *Oncidium Henchmannii.* This is a new and exceedingly pretty species of *Oncidium*, which Mr. Low has imported from Rio del Monte; it has been named by J. Bateman Esq., of Knypersly, after Mr. Henchman, of the Clapton nursery; the leaves are about nine inches in length, fleshy, oblong, acute, and the flowers appear to be produced very freely and abundantly; the predominant colours in the latter are pink and yellow, beautifully mottled with brown, and they are nearly as large as those of *O. Cebolleti;* it is a truly elegant addition to this already extensive and interesting genus, and should be in the possession of every admirer of this beautiful tribe. Mr. Low has recently obtained many new and valuable greenhouse and other plants, among which we noticed a fine specimen of *Cowania plicata*, which is represented as a truly excellent half-hardy shrub.

Messrs. Rollison's, Tooting. *Pheleonopsis amabile.* This is a new and highly interesting and beautiful orchideous plant, which Messrs. Rollison received a few months ago from Manilla; the generic name is given from the resemblance the flowers bear to a moth; the flowers are composed of five petals, which are remarkable for being most distinctly marked with numerous little nerves or veins, and the labellum is one of the elegant and interesting objects, both as regards structure and colours, we have before seen amongst the plants of this beautiful tribe, and completely baffles description; the foliage is handsome, and the flowers are produced abundantly on long slender flower-stalks. It appears to delight in growing on a block of wood. This is certainly one of the most valuable additions which our collections have received for some time. There is also at this nursery a very fine specimen of *Lœlia anceps Barkeriana*, now most splendidly in flower, and we think that this variety is superior to the species in some respects. A curious phenomenon is occurring also on a plant of *Peristeria Parkeri*, which is now producing one spike of flowers from the summit of the pseudo-bulb, and there is evidently another spike protruding itself from the base of the same bulb; but as it is not yet in flower, we reserve further notice of it till a future number.

Mr. Young's, Epsom. *Genista monosperma.* This delightful and fragrant plant is again producing its delicate blossoms at this nursery, and recommends itself to a place in every collection. Mr. Young possesses also some new and truly valuable greenhouse and other plants, which he has received from Scotland and the continent. He has likewise received some highly valuable ones from Philadelphia. amongst which is a California plant, called *Anemia Californica;* from the description sent, this will prove a most desirable addition to our present stock of half-hardy herbaceous plants, and great expectations are entertained of it. Besides the above, many other good new plants may be expected to emanate from this nursery in the ensuing season.

NOTICES ON THE CULTURE OF NEW AND RARE PLANTS

IN THE LEADING NURSERIES AND PRIVATE GARDENS IN THE VICINITY OF LONDON.

On the culture of *Luculia gratissima.* This charming plant, which was introduced to this country from Nepal in 1823, is yet comparatively scarce and valuable. A mistaken notion generally prevails in the treatment of this plant with regard to temperature, as we frequently find it amongst a collection of stove plants in the hothouse or stove. The two great evils attendant on this system are, first—that plants so treated grow so luxuriantly, that they are incapable of producing more than a few flowers, or in many instances do not flower at all, and those flowers that are produced too generally become mildewed, or otherwise damp off, owing to the excessive moisture necessary in the stove; and, next, that in this situation, they are extremely liable to the attacks of the red spider, which always render the plant unsightly, and frequently cause the leaves to fall off entirely.

To obviate these evils, Mr. Young, of Epsom, had recourse to a system of placing this plant in a house the temperature of which was kept intermediate between the stove and the greenhouse, and the most complete success has resulted from it. The house in which it was placed was kept at a temperature a little above that of the greenhouse, with an atmosphere not too dry, but very slightly humid, and very little air was admitted, except in the summer months. To propagate it abundantly, it is advisable to place it for some time previous to taking off the cuttings in the heat of the stove, where it will produce an abundance of young and vigorous shoots, which may be taken off at almost any season, and they will strike freely in sandy loam under a bell-glass, in the stove. The plants from which the cuttings have been taken may be retained in the stove till they have formed new shoots, when other cuttings can be taken off if required; if not, they should be removed to a house of the temperature before named. The cuttings, after they are struck, should be potted off into small-sized pots, and repotted as they may require. The soil best suited to this plant is a compost of heath mould and rich loam. Well-established plants kept in the temperature before proposed, will, about the months of November or December, when our plant-houses are almost devoid of interest, produce a fine cluster of beautiful pink-coloured blossoms from the termination of every shoot, which will remain expanded for some months, and exhale a most delightful and agreeable odour. When the flower-buds begin to appear, and till they are fully expanded, it is important that they should be frequently fumigated with tobacco-smoke, as at this period of their growth they are extremely subject to the ravages of the green fly. Plants now in the possession of of Mr. Young, treated as above proposed, are flowering from the extremity of every shoot; while such as have been kept in the stove rarely produce more than two or three clusters of flowers. We recommend our readers to try this proposition, and we feel assured that they will be amply rewarded by a rich profusion of the delightful blossoms of this truly excellent plant.

On the winter treatment of *Pentstemon Murrayanus.* We have elsewhere observed, in a former number, that to flower this plant in the greatest perfection, it should be planted out into the open border; but it is necessary to remove it from this situation after the flowering season is over, in order to preserve it through the winter from the attacks of frost, mildew, &c.; to effect this, the plants should be taken up and potted into pots of sufficient magnitude to contain the roots, and these plants thus potted, together with such young ones as may have been taken from them, will require the greatest possible care and attention during the winter season; for want of attention to this particular has been almost the sole reason why this plant is still so scarce in this country. The shelf of a greenhouse as near as possible to the glass, and where free circulation of air can be obtained in mild and fine weather, has been found by experience to be the best situation for them at this season; every precaution must be used in order to preserve them from damping off; water must be administered seldom and judiciously, and never over the leaves; whenever the leaves are observed to become spotted with brown it is a sure indication that either the atmosphere of the house has been kept too humid, or that too much water has been incautiously given them; and if these symptoms are passed by unheeded, the plants will gradually sicken and eventually be irrevocably lost; but if these things are properly and immediately attended to, if water is withheld, and a free circulation of air is obtained if possible, this plant may be safely preserved through the severest winters, and form in the succeeding year, one of the most brilliant and showy ornaments to the flower-garden at present known to our collections. We are indebted to Mr. Young of Epsom for the above hints, who, owing to his judicious management, has ensured perhaps the best disposable stock of this splendid plant in the kingdom.

ON GRAFTING CACTÆ.

Although great success has already resulted from, and great progress has been made in, the practice of grafting various species of *Cactœ* on others of stronger and more succulent habits, as well as on stocks of *Pereskia aculeata*, there can be little doubt that much yet remains to be done, and many experiments yet remain to be tried in this interesting subject. Every person who is at all conversant with Floriculture, or who is accustomed to visit the gardens of noblemen, gentlemen, or nurserymen, in the spring season of the year, must have been struck with the peculiarly curious and beautiful appearance of many species of *Cactœ* which have been ingrafted into other sorts of opposite characters; and, by the judicious management of the cultivator in placing weak and slow-growing sorts in those of stronger habits and more rapid growth, the great superiority and extraordinary beauty of the flowers produced cannot fail to have been noticed and admired. But, we presume, few persons have yet practised the system we are about to detail, or have yet made the experiment of grafting the different species of *Echinocactus*, *Mammillaria*, &c., on stocks of *Pereskia aculeata.* This has, however, been effected by Mr. Knight, Chelsea, and the plants so treated have grown in the most luxuriant manner, and have a very novel and highly interesting appearance. To all persons acquainted with the habits of the various species of *Echinocactus*, *Mammillaria*, and other cactaceous genera which do not produce flat or angular-leaf-like stems, but form themselves into spherical heads, it is a well-known fact that they produce their roots so scantily, as, in many instances, to be almost entirely destitute of them; and, consequently, the plants make little progress in their growth, and seldom attain to any considerable size; but, treated according to the system we have just alluded to, the strong and vigorous roots of the *Pereskia* supply them most abundantly with nutritive matter, and accelerate their growth in a most surprising manner. The mode of practising it is very simple. Having prepared a quantity of stocks of *Pereskia aculeata*, which have been previously divested of all their branches, and have attained the height of eighteen inches or two feet, cut the extremity of the stem nearly to a point, and then take species of *Mammillaria*, or others of a similar nature, and cutting off all the roots, make a small hole in the centre of the base of the plant, and simply insert the stem of the *Pereskia* thus prepared into it, taking care to shade it from the influence of the sun, and keep it in a moist heat. In this manner the species used for the graft, and the plant which is grafted upon, will soon become firmly united, and grow and flourish in the most vigorous manner. But, as we have not now space sufficient to enter more minutely into the details of this interesting subject, we shall embrace a future opportunity of laying before our readers some further information respecting it, feeling assured that any particulars relative to the cultivation of this curious, extensive, and much-admired tribe, will always prove acceptable.

OPERATIONS FOR FEBRUARY.

FLOWER-GARDEN.

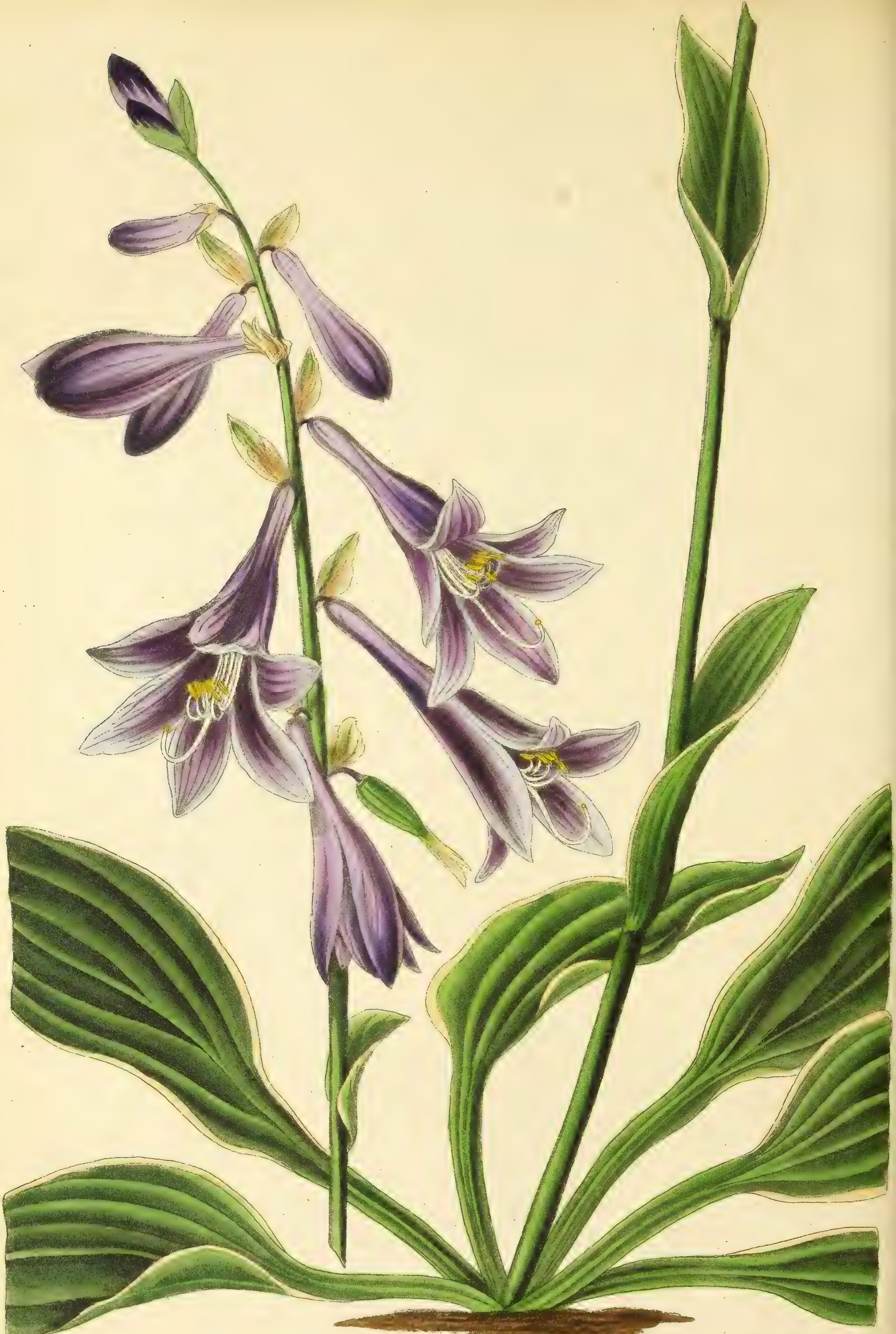
THE operations in the flower garden are now becoming numerous, and in some instances pressing. A gentle hotbed might now be made up for tender Annuals; the seed should be sown in light loamy soil and thinly covered. A gentle hot bed might also be made up, and covered with old partially decayed tan, for receiving some old Dahlia roots in order to induce them to push for cuttings. Seeds of this plant may now also be sown in a warm frame, in pots, or drills. Anemones might now be planted, and *Auriculas*, *Polyanthuses*, &c., will require top-dressing, and in other respects examining and renovating. Sow Calceolarias on a moderate hotbed towards the end of this month or early in March. Turn especial attention to *Tulip* beds, and all kinds of bulbs; they are exposed to a variety of injuries at this season.

GREENHOUSE.

GIVE a little air occasionally in fine weather, as this will be of great benefit to the plants. Be especially cautious in watering at this season, particularly such plants as Banksias, Ericas, &c. Prune, dress, and regulate creepers before they commence growing. Plant new kinds, renew the labels, and set other little matters straight, before the general potting season commences. Prepare pots, soil, &c., that all may be ready at hand when wanted.

STOVE.

STEPS should now be taken for potting orchideæ plants, &c.; as the operations will soon commence, a sufficient quantity of good peat should be got in readiness for such of the orchideous plants as require it, and a good quantity of proper moss for others. Before any orchideous plant is potted, the soil in which it has been growing should be dried well previously, as by so doing the roots are less liable to be broken when moved. A quantity of loam of proper quality with other requisites should be prepared for other stove plants. Water the plants throughout this month with the utmost caution, and give a little fresh air when the weather will admit. Introduce bulbs, shrubs, &c., for forcing; give them plenty of water, both at the roots and top, fumigate them the very moment insects appear, and they will flower well for ornamenting the greenhouse.



Hemerocallis Sieboldii.

MARCH 1

HEMEROCALLIS SIEBOLDII.

(SIEBOLD'S DAY LILY.)

CLASS.	ORDER.
HEXANDRIA.	MONOGYNIA.

NATURAL ORDER.

LILIACEÆ.

GENERIC CHARACTER.—*Flowers* campanulate, with a cylindrical tube. *Stamens* declinate. *Stigma* small, simple, villous.—*Lond. Encyc. of Plants.*

SPECIFIC CHARACTER.—*Plant*, an herbaceous perennial. *Roots* fibrous. *Radical-leaves* spatulate, ovate, acute, nervose. *Stem-leaves* amplexicaul, oblong, acute. *Flower-stalk* from nine inches to a foot high, roundish. *Flowers* of a delicate pink colour, merging to white towards the centre. *Perianth* of six nearly equal segments ; *segments* slightly reflexed, bluntish. *Stamens* six, filaments much curved at the extremities. *Style* longer than the stamens, also curved at the point. *Ovary* oblong, slightly pendulous, three-celled.

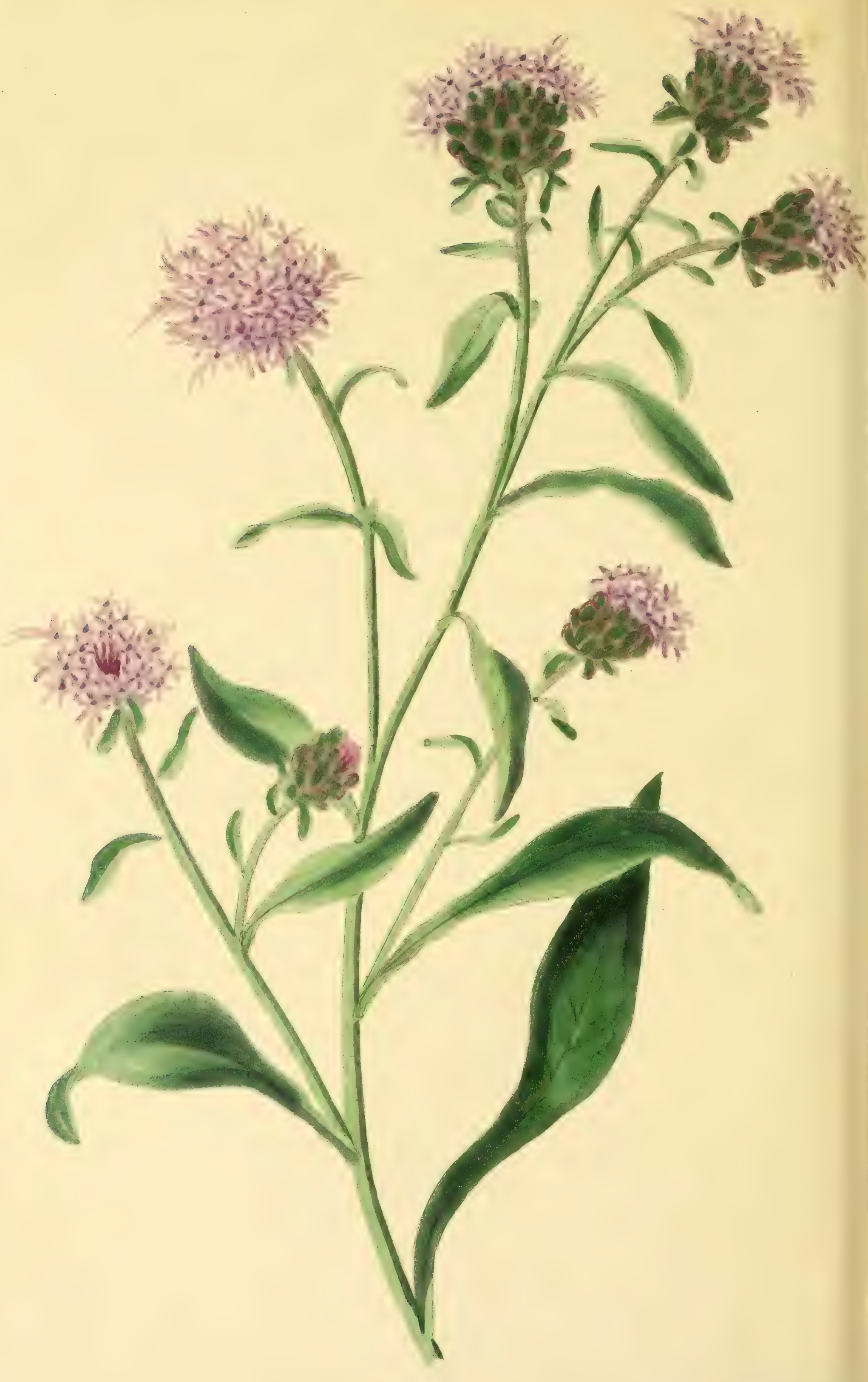
FEW hardy plants have a more elegant and interesting appearance when in flower, or are more worthy of a place in the flower bed or border, than the one here represented ; and it is much to be regretted, that, in a lovely plant like the present, the flowers are so exceedingly fugitive ; but this is the case with most species of the tribe Liliaceæ and Amaryllideæ, which, were it not for this circumstance, would doubtless be more valued than any other family of plants, as they contain some of the most splendid objects known to our collections. The present plant, however, is not remarkable for the splendour of the colours of its flowers ; but their delicacy and elegance are alone sufficient to entitle it to the cultivator's care and attention.

In the nursery of Mr. Young, Epsom, from whence our drawing was taken in September, 1837, it produced its beautiful blossoms in great perfection. It was received by the above-named gentleman from the continent, under the name here given, and was stated to have been introduced thither by Dr. Von Siebold, from Japan, about the year 1833. Upon this authority alone we have published it with the above appellation, and if it should prove incorrect, no blame can be imputed to us.

It thrives best in a rather rich soil, and is perfectly hardy; it is also a free flowering plant, and may be readily propagated from seeds or offsets; but, unlike most of the other species of the genus, it is deciduous. We believe plants of it may be obtained at the Epsom Nursery at a moderate cost.

The generic name is derived from *hemera*, a day, and *kallos*, beauty, in allusion to the short time the flowers remain expanded.

The specific name is given in honour of Dr. Von Siebold, by whom it is said to have been introduced.



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LIATRIS BOREALIS.

(NORTHERN LIATRIS.)

CLASS.
SYNGENESIA.

ORDER.
ÆQUALIS.

NATURAL ORDER.
COMPOSITÆ.

Generic Character.—*Calyx* oblong, intricate. *Pappus* feathery. *Receptacle* naked, dotted. *Seeds* furrowed, hairy.

Specific Character.—Plant an herbaceous perennial, growing from a foot to eighteen inches high. *Leaves* ovate, acute, slightly downy. *Flowers* terminal, capitate, pink. *Florets* tubular, four or five cleft. *Roots* tuberous.

Among the numerous beautiful objects which are continually being introduced into this country from the New World, for the purpose of ornamenting our flower-gardens and pleasure-grounds, some recommend themselves to our notice on account of the size and splendour of their flowers, while others attract our attention by the simplicity and neatness of their general appearance. Of this latter class is the plant now before us, which, though it does not possess that brilliancy of colour and boldness of habit so remarkable in some species of Pentstemon, &c., inhabitants of the same regions, cannot fail to command attention and excite admiration on account of the peculiar beauty and delicacy of its flowers, as well as by its elegant and interesting habits.

Mr. Young, of Epsom, to whom we are indebted for our drawing of this plant, received it in 1836 from the Glasgow Botanic Garden, and in the absence of any specific information on the subject, we presume it was introduced thither by Mr. Drummond, as it is doubtless a native of North America.

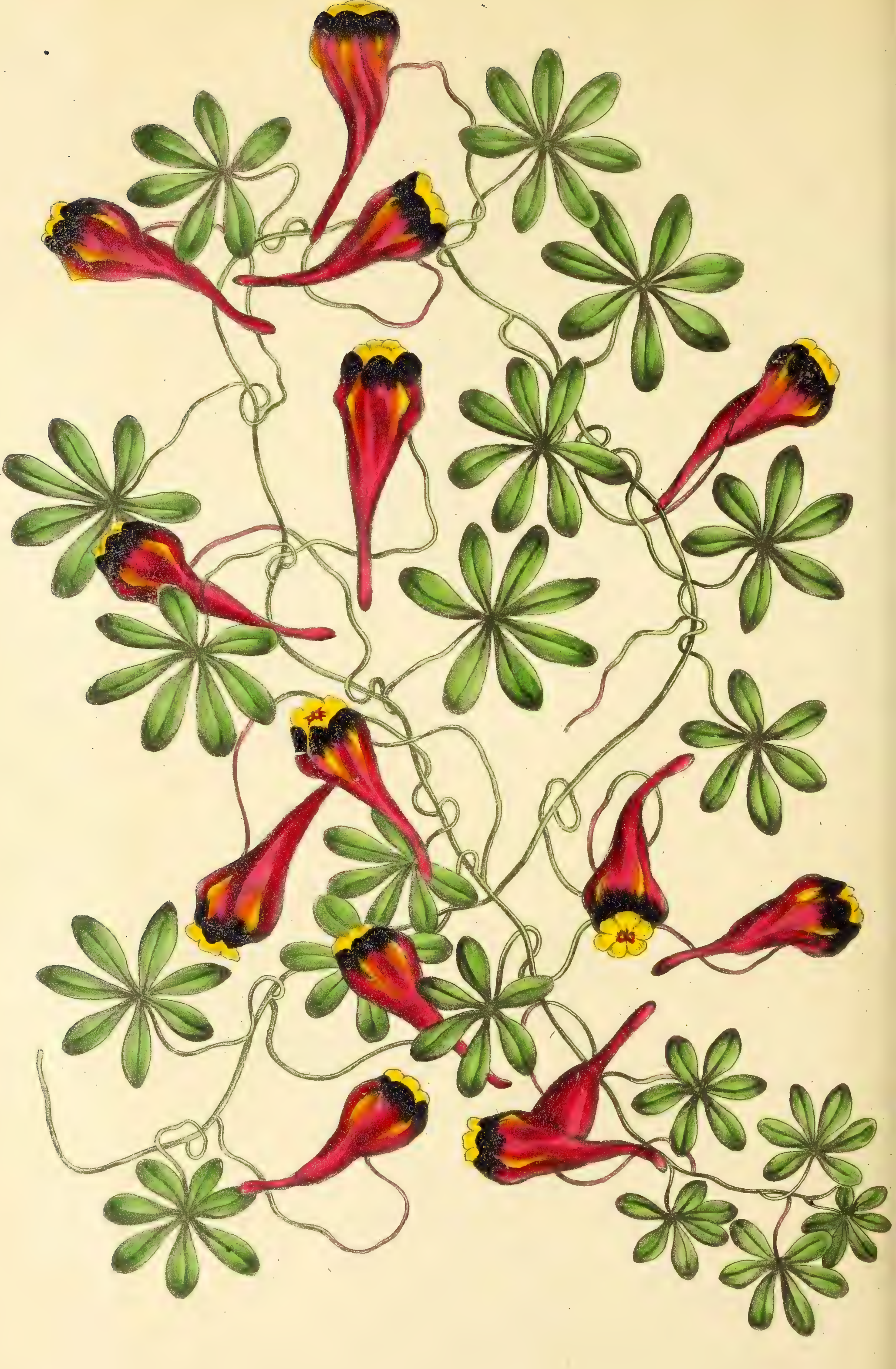
It is perfectly hardy, having endured the whole of the late severe winter in the open ground, without any protection, and is now vegetating most rapidly. It appears to thrive well in any soil, but delights most in a mixture of loam and peat, with the common treatment of other herbaceous plants.

The flowers are produced in great abundance, and a strong plant will throw up many stems. It may be readily propagated by the tubers, as a single tuber will make a very good plant.

Our drawing was taken from a plant in Mr. Young's nursery, Epsom, in September 1837, where it flowered during the months of August and September.

Generic name—the meaning of this word is unknown.

The specific name doubtless alludes to the plant being found in a northerly situation.



Tropæolum Jarrattii.

MARCH 1. 1

TROPÆOLUM JARRATTII.

(JARRATT'S TROPÆOLUM.)

CLASS.
OCTANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
TROPÆOLEÆ.

GENERIC CHARACTER.—See vol. ii. p. 193.

SPECIFIC CHARACTER.—*Root* perennial. *Stem* climbing, slender, but far more vigorous than *T. tricolorum ;* much branched. *Leaves* alternate, six and seven lobed. *Leaf-stalk* one inch long, slender, twining like the branches. *Flower-stalks* from one inch and a half to two inches and a half long. *Calyx* bright orange scarlet, with spots of yellow at the base, five-cleft; *segments* blunt. *Petals* five, inserted on the calyx just below the incision of the segments, bright yellow, the two upper pencilled with a rich brown. *Stamens* eight. *Style* shorter than the stamens. *Germen* three-lobed.

THIS new and highly interesting species of Tropæolum was imported in August 1836, from Santiago, by Messrs. Youell, nurserymen and florists, Yarmouth ; and named by them in compliment to John Jarratt, Esq., of Camerton House, near Bath, a spirited horticulturist.

In general appearance it resembles T. tricolorum, from which however it is obviously distinguished, as will appear from the following. The flowers are much larger than those of T. tricolorum, far more brilliant in colour, besides the additional yellow on the outside of the flower, as well as the two upper petals being pencilled with a rich brown ; and last, though not the least point of difference, is its robust habits, which will render it no mean object for the flower-garden during the summer months. We are strongly impressed with the idea, that it will prove more hardy than any of the previously-introduced species, it having produced its flowers in a cool greenhouse which has been heated merely at intervals to exclude frost.

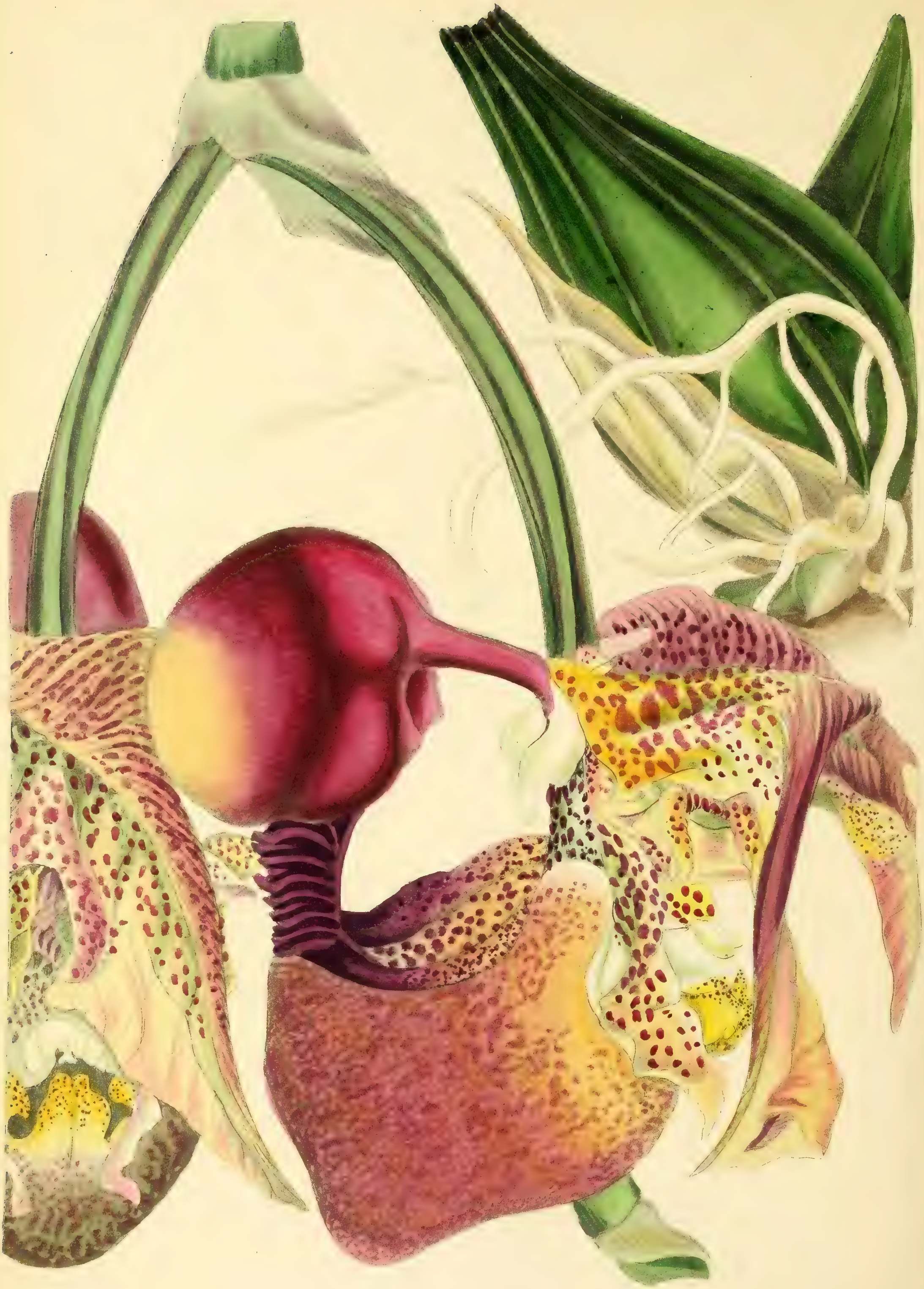
A more profuse blooming plant we scarcely remember to have witnessed, and even when it was first excited, before it had produced a shoot twelve inches in length, flower-buds appeared in considerable numbers.

It should be grown in a 16-size pot, in equal parts of loam and peat.

It was sent to Messrs. Youell from a friend of theirs residing in Santiago, together with fifty bulbs of the genus, out of which the one in question and T. brachyceras are the only two that have yet bloomed, but we expect that others, probably new, will flower shortly.

The drawing was kindly furnished in 1837 by Messrs. Youell, who have a stock of fine young plants for sale. It may be propagated from cuttings planted in sand and placed in heat under a glass.

The generic name is explained in vol. ii. p. 123.



Coryanthes macrantha.

CORYANTHES MACRANTHA.

(LARGE-FLOWERED CORYANTHES.)

CLASS.
GYNANDRIA.

ORDER.
MONANDRIA.

NATURAL ORDER.
ORCHIDACEÆ.

Generic Character.—*Petals* five, three exterior ones most spreading and reflexed, of which the side ones are the largest; the two inner ones much smaller, erect. *Column* cylindrical at the base, two-cleft at the summit, truncate, two-winged, and otherwise prolonged in a ridge on each side. *Labellum* cup-shaped, stalked, appendage very large, helmet-shaped, three-toothed, pedunculate, in part enveloping the column. *Anthers* terminal, their extremities of a cover form. *Pollen masses* two, ovate, with compressed margins.

Specific Character.—*Leaves* noble, lanceolate. *Pseudo-bulbs* ovately conical, high, furrowed. *Labellum* plaited on both sides, folds deflexed.

Synonyms.—*Gongora macrantha. Hooker's Bot. Misc.* ii. p. 151, t. 80.
Coryanthes macrantha. Bot. Mag. p. 3102.

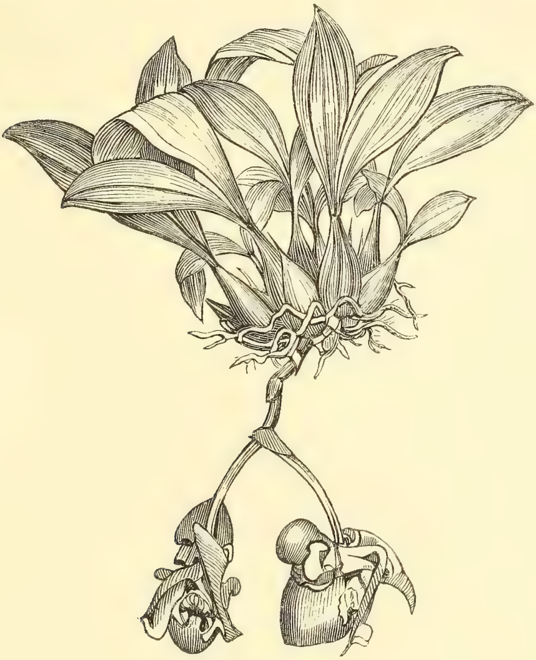
The first account we have of this strange species of Orchidaceæ is in Sir William Jackson Hooker's Botanical Miscellany, where it is figured from specimens preserved in spirits sent him by Mr. Lockhart from the Caraccas. In 1836, a plant flowered in Mr. Knight's nursery in the King's Road, since which flowers have been produced in other collections in this country; and in 1837 a plant at Chatsworth flowered in the manner here represented; and such was the extraordinary form the flowers presented, that (as was the case with the visitors when the blossoms were first seen in Trinidad) wonder and surprise was created in all who were favoured with an opportunity of seeing them. The plant and flowers are thus described by Dr. Lindley in the *Bot. Reg.* p. 1841. "The plant has the habit of a *Stanhopea* or a *Gongora*, and pushes forth from the base of its pseudo-bulbs a pendulous scape, on which two or three flowers are developed. Each flower is placed at the end of a long, stiff, cylindrical furrowed ovary, and when expanded, measures something more than six inches from the tip of one sepal to that of the opposite one. In colour the sepals are an ochrey yellow, spotted irregularly with dull purple; they have a most delicate texture; the upper sepal falls back from the tip of the ovary, is narrow, and not above one half the length of the two lateral ones, which, instead of applying themselves to the lip, as is usually the case, turn directly away from it, placing themselves at an acute angle with the upper sepal, and after a while collapsing at their sides till they look something like *bats' wings* half at rest. The petals, which are narrowly lanceolate, very weak, and much curved at the edge, have the same colour and texture as the sepals nearly, and are intermediate in length between the upper one and those at the side; they hang nearly parallel with the column, but are so placed as to conceal in no degree the lip, nature taking most especial care to exhibit this strange part in the most conspicuous manner. The lip is as fleshy and solid in its texture as the petals and sepals are delicate; it is seated on a deep purple stalk, nearly an inch long, and forming an obtuse angle with the column, and consequently an acute one with the ovary; this stalk terminates in a hemispherical greenish-purple cup, or rather cap, considering its position; and the latter, contracting at its front edge, extends forward into a sort of second stalk of a very vivid blood colour, the sides of which are thinner than the centre, turned back, and marked with four or five very deep solid sharp-edged plaits. These plaited edges again expand and form a second cup, less lobed than the first, thinning away very much to the edges, of a broadly conical figure, with a diameter of at least two inches at the orifice; this second cup is of an ochrey yellow, streaked and spotted with pale crimson, and seems intended to catch a watery secretion, which drips into it from two succulent horns, which take their origin in the base of the column, and hang over the centre of the cup."

The treatment required for this plant is so similar to that given to Gongoras and Stanhopeas, that scarcely any alteration is necessary to be made; it may be described as follows:—In potting, use free fibrous sandy peat, with plenty of drainage, build the bulk of soil a trifle above the level of the pot in consequence of the pendulous nature of the flexuous scape; for an illustration of which see woodcut figure. In the spring, when the young buds begin to swell, let it have plenty of water and heat, and it will grow and flower very freely.

The way of propagating it, is by taking off one or more of the bulbs, potting them in proper-sized pots in the above soil well drained, and placing them on a hot flue, being careful in watering not to allow any to rest upon the young buds. After they have made roots, increase the size of the pots, and in other respects attend to them as before described, and they will grow well and soon make flowering plants.

The generic name is taken from *korys*, a helmet, and *anthos*, a flower, in allusion to the large helmet-like appendage to the lip of the flower.

The specific name alludes to the size of the flower.



ON THE RELATIVE MERITS OF IRON AND WOOD ROOFS, FOR STOVES, GREENHOUSES, &c., &c.

BY J. THOMSON,

LANDSCAPE GARDENER, NURSERYMAN, AND HOTHOUSE DESIGNER, BEULAH SPA, CROYDON, SURREY.

With Practical Observations and Calculations on the Consumption of Fuel and Breakage of Glass under both kinds of roofs, made during fifteen years' practice as Gardener to the Duke of Northumberland at Sion House, Kew, and elsewhere: with an account of several years' observations made on heating Forcing and other Houses with common Flues, Steam Boilers, and with six of the most approved systems of heating by Hot Water. Also a description of the Economic Egg-shaped Boiler, the invention of the writer, which has given general satisfaction by the efficacy and simplicity of its construction, and its economy of Fuel and Labour.

Sir,—Knowing that a great diversity of opinion exists as to what description of materials are of most avail in the construction of roofs for stoves, greenhouses, and other buildings intended for the culture of fruits, and of tropical and other plants; and having had for years the management of the extensive ranges of glass at Sion House and other places where the lights and rafters were constructed both of cast-iron and wood; I am induced to submit to your consideration the result of my practical observations relative to the two descriptions of houses under consideration, as a guide to persons who may be inclined to build, but are unacquainted with the injurious consequences of ill-constructed hothouses for horticultural purposes. Having had fifteen years' practical experience, and the management during that long period of above three thousand running feet of glass designed for the culture of fruits and plants, I am enabled to speak with some decision on the subject: and there are, I doubt not, hundreds of practical gardeners who will confirm the truth of the following observations, and agree with me in the decided conviction I entertain of the superiority of wood to iron. I feel fully justified indeed in saying, that when the merits of wood and the demerits of iron are fully ascertained, the erroneous prejudice in favour of the latter will cease to exist in the minds of all candid men who are practically acquainted with the properties of the two materials. Every person possessing even a slight knowledge of the expansion and contraction of all metallic substances, may form some idea of the inevitable expansion of a large iron-roofed house on a hot summer's day, and of its unquestionable contraction during a night of severe frost. So powerful have I known the action of the sun's rays to prove in expanding the iron rafters and lights of a large roof on a hot day, that I have found the strength of two and sometimes three men insufficient to force down the sliding lights for the admission of air. In fully equal proportions have I witnessed the contraction of the metal during the intensity of winter, when so large have been the apertures between the rafters and the lights, as to admit the external air in a degree sufficient to counteract entirely the power of two strong fires, when the flues have been heated to the greatest excess, before the temperature of the house could be raised to 30°, the thermometer then standing (out of doors) at 18° of frost: this was in February, 1830. Now this occurrence took place in a house of no very large dimensions compared with the wood-roofed vinery I am about to describe. The dimensions of this building were forty feet long by sixteen wide and nine feet high, with a pit in the middle for the culture of pines, &c., which very much reduced the cubical number of feet of air to be rarified, compared with the wood-roofed house, which was fifty feet long, fourteen wide, and fourteen high, without any pit in the middle. Having thus stated the dimensions of the houses, I shall now give the results of the investigation and calculations made relative to fuel, attention, &c. &c. The coals for both houses were measured before being placed for use; and after the consumption of the night's fuel, the result was as follows:—The iron-roofed with 18° of frost, required the consumption of nearly six bushels of coals, and unremitting attention during the night, or until three o'clock in the morning; while the house with the wooden-roof consumed scarcely three bushels of fuel in order to keep it at the same degree of temperature with its iron rival; and no attention was required after ten or eleven o'clock at night, when the fires were made up and left. Moreover, being determined to investigate thoroughly the merits of the two materials, I caused a house, constructed of wood, and also one of iron of precisely the same dimensions as regarded superficial feet of glass, to be perfectly repaired in the autumn of 1832; and on having them examined and repaired in the following season, I found that in the cost of repairing, the iron house cost nearly double the sum required to repair the wooden one. I do not mean to say that double the number of squares were absolutely broken, but including the broken and cracked squares there was more than double the number destroyed, and this I attributed to the expansion of the iron during the summer and its contraction in winter.

From these calculations, it is quite evident that wood has the advantage over iron in four very essential points, viz., the saving of *fuel*, *glass*, *and labour*, and in the better growth of plants and fruits, as I have invariably found plants do not thrive so well or look so healthy in an iron as in a wood-roofed house. The non-conducting power of wood, and the electrical (nay I may say caloric) sensibilities of iron may be the cause of this difference. Iron is infinitely more liable than wood to the sudden and injurious variations of temperature from heat to cold. I have always found during my practice, that no matter how the iron hothouse might be situated, unless there was a slight shading on the houses during the hot days in the summer months, the leaves of the pines and other plants become very brown and frequently scalded; but whenever these shadings are not used, I would strongly recommend that a large cistern or trough of water be placed about the houses in order to make up by the continued evaporations for the deficiency of moisture exhaled by the powerful action of the sun. Another important circumstance is worthy of the gardener's attention:—viz., that iron houses should be painted internally, either annually or biennially at the farthest, to prevent the drip from the corroded iron injuring the foliage of the plants; for I have always found this ochreous or metallic deposit injurious to the leaves. Since these remarks were made, I have had sufficient proof of their correctness, and of my former comparisons, through having extended my observations still farther in the season of 1834; and these, as you will perceive, fully confirm the accuracy of my previous calculations. By working two houses at the same temperature, 55 to 60° Fahrenheit, the result was as follows:—The wooden-roofed one consumed only one bushel and a half every night, while the iron-roofed one burnt from two and three quarters to three bushels; this last experiment was made two months later in the season than when my attention was directed to the subject before; but then you will see they bear the same proportions as to fuel, &c. The dimensions of the houses were as follows:—the wood-roofed house fifty feet long, fourteen wide, fourteen high; the iron, sixty feet long, fifteen wide, twelve high; the latter was a vinery, and had a pit in it for the culture of pines, which very much reduced the number of cubic feet of air to be heated compared with the wood-roofed one for the culture of peaches, which had no pit in the centre.

Notwithstanding however, that, the whole of my observations and calculations are unfavourable to iron roofs, yet I am willing to admit, that for lightness and neatness of appearance in the structure, iron has and always will have the preference; but still I am confident, that if proper attention were paid to the construction of hothouses, and to the materials used in their erection, the appearance of wooden roofs would not be altogether objectionable. Now, for the assistance of persons building houses for horticultural purposes, who may have had less practical experience than myself, I will here give a brief description of such materials and mode of construction as I think will combine the whole of the desired objects. The first thing to be attended to, is to give the roof a proper pitch or inclination, so as effectually to carry off the water, and to prevent drip in the house, which is highly injurious to all plants, particularly those grown in pots. Secondly, to form the roof in the following manner:—the rafters to be of wood, varying according to the length of the roof from six to eleven inches, the section of the rafter to be wedge-shaped, from three to four inches wide on the upper side where the lights rest, and about half an inch wide on the bottom or under side. The ends and sides of the lights to be made of wood, the top from five to six inches, the sides two inches and a half, and the bottom from six to seven inches wide; and the sash bars, to prevent as much as possible the obstruction of the sun's rays, should be of copper, which will give the house a light and neat appearance, without subjecting the plants to the injurious extremes of temperature, heat and cold, as the small quantity of metal in the thin sash bars, which need not be more than half an inch wide and about the same depth, will cause but very little variation in the temperature by radiation, and suffer little from expansion and contraction; neither would it render the expense of the light much more than if made of wood, for as copper of that dimension would not weigh more than six ounces to the running foot, I should suppose it could be bought at about one shilling and eightpence per pound, therefore the expense would be trifling when compared with the advantages; and indeed the extra expense would be repaid in a few years by the saving of wood in repairing the glass, as glaziers cannot pick out old putty without destroying the sash bars; and this being frequently repeated (as is necessary when lights are kept constantly in use) very soon lessens the substance of the sash bars. I therefore recommend all persons, about to erect forcing and other houses, to have them constructed of the above materials, particularly if they are desirous to excel in the culture of fruits and plants, as by the use of copper sash bars they obtain all the desired objects:—viz., lightness of appearance, economy of fuel, glass, and labour. Moreover, any gentleman, before erecting or deciding on any particular plan or dimensions of houses for horticultural purposes, should consult his own gardener or some other practical man acquainted with the subject, as it is impossible for any architect or surveyor to know the proper dimensions and elevation of a hothouse, greenhouse, or other buildings, was to answer all the intended purposes to which they are appropriated, so well as the gardener. It is true that an architect may make a very interesting external drawing, which to the eye appears perfection, without its even answering any one of the desired ends. Convenience of paths or walks, bark or tan beds, stages, flues, cisterns for water, ventilation, and innumerable other little requisites and necessaries for a stove, greenhouse, or conservatory, may be overlooked; and as every gentleman who goes to the expense of erections of this description expects in due time to have the benefit of his outlay in fruit, or the satisfaction of an extraordinary fine individual specimen or general display of flowers, should he be eventually disappointed in not enjoying those anticipated gratifications through the bad construction of his house or houses, I regret to say it too frequently occurs that the industrious, persevering, and, anxious gardener is blamed for neglect of duty or want of skill, not only by his employers but by others equally unacquainted with the cause. But upon examination of the house by a competent and practical man, it turns out that the blame and ill-success are attributable to the formation and aspect of the house. Various genera and species of plants require peculiar treatment and different situations, so that had the gardener been consulted as to the height of stages, depth of tan-beds, and proper situation of the flues (or other modes of heating), all this disappointment to the employer and employed, through ill-success, would have been prevented. Moreover, it too frequently happens with these pretty plans prepared by non-practical men, that there is an insufficiency of means provided for the proper ventilation of houses, and want of ventilation in iron curvilinear roofs is frequently attended with the most disastrous consequences, which is a confirmation of the correctness of my observations, and of the importance of proper ventilation, and of plants always being liable to be scorched under an iron-roofed house.

I remember witnessing this last summer, the destruction of the whole of a fine crop of grapes as well as the foliage, when nearly full swelled, in a gentleman's hothouse in Kent, which was erected of cast-iron about six years ago. The destruction occurred through the architect failing to allow a proper ventilation; and to prevent the second house of grapes, which had then suffered severely, from sharing the same melancholy fate, the gardener, who is admitted to be as good a practical man as any in the kingdom, caused some holes to be made in the back wall of the house about one foot wide and three feet long, where he introduced shutters hung on hinges, by which means he fortunately succeeded in saving the second house of fruit, but not without great injury to the foliage. This unfortunate and unavoidable circumstance was generally known in the neighbourhood of Seven Oaks, and observed by many practical gardeners, who can vouch for the accuracy of this statement.

Having I think fully shown the advantage possessed by wood over cast-iron in these very essential points, the better growth of plants, and the saving of fuel, glass, and labour, I shall now give a description of my apparatus for heating by hot water, deferring until next month any further observations on the various modes of heating houses.

Figures 1, 2, 3, and 4, are intended for houses of small dimensions, and the larger one, figure 5, for extensive houses: this boiler as well as the other is oval-shaped, and would be sufficient to heat seven or eight hundred feet of four-inch pipe at a trifling expense; for during the severest part of last winter, all the houses I have heated with this plan of boiler were kept up to their respective temperatures without burning one bushel of coal, the only fuel used being small coke; and during the intense frosty night of January 19th of the present year, when at a quarter past six o'clock in the morning, the thermometer stood at 12 degrees below zero, or 42 degrees of frost, we had not the least difficulty in keeping the whole of the stoves and greenhouses at their respective temperatures. I have devoted much time and attention to heating houses with hot water for several years, but more particularly last season, and this winter up to the present time; and from accurate calculations made of the number of superficial feet of glass exposed to the action of the weather, I am enabled, from watching the thermometers both out of doors and in the houses with all extremes of weather, to calculate most correctly the number of superficial feet of pipe required to command (even with 42 degrees of frost) any given degree of heat requisite for stoves, greenhouses, or other buildings; and the want of this practical knowledge and attention to this highly important part (the radiating surface) has been the cause of so many complaints against the system of heating by the circumvolution of hot water, all of which would have been prevented had the hot-water fixer devoted a few nights during severe frosty weather to these indispensably necessary calculations; but then his remarks should not have rested on the observations made during a *calm* night of severe frost, for I have proved, by sitting up and watching the thermometers for whole nights together, that 16 degrees of frost with a strong wind is more trying to a house, than a severe night's frost like that of January 19th, when the thermometer fell to 12 degrees below zero, or 42 degrees of frost. I am induced to send you this account of the degree of frost at Norwood (which may be relied on, as I sat up the whole of the night to make my observations and calculations), thinking it might interest some of your numerous readers.

Figure 1, is the elevation of the front. Figure 2, a transverse section across the furnace and boiler; 3, is a longitudinal section through the centre. 4, is a plan of the furnace, a lower part of the boiler; the same letters refer to similar parts in each figure. A, is the furnace in which the fuel is placed, entirely surrounded (except the under side) with the boiler. B is the check draugtht, over which the heat, flame, and smoke, pass to a small aperture C in the back of the boiler, communicating with the flues, D, surrounding the lower part, which unite and pass through an opening, E, in the flange on each side of the furnace door to the flue which surrounds the upper part, and terminates at the brick flue G, furnished with a damper to regulate the draught. The boiler, H, is in the form of an egg on the plan, with a chamber all round connected by the check draught, B, and surrounded with the cover to the flue, I, with an iron cap,

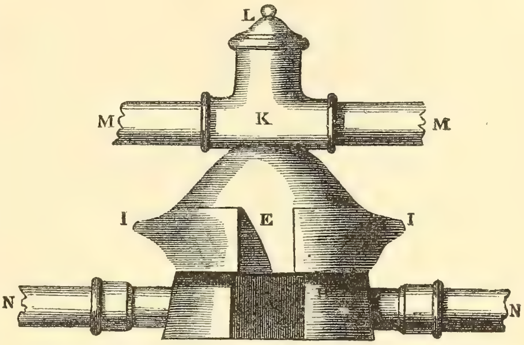


Fig. 1.

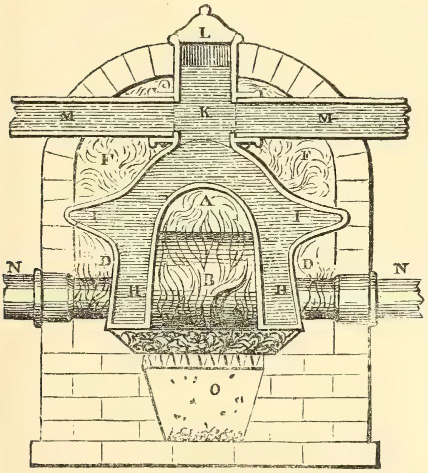


Fig. 2.

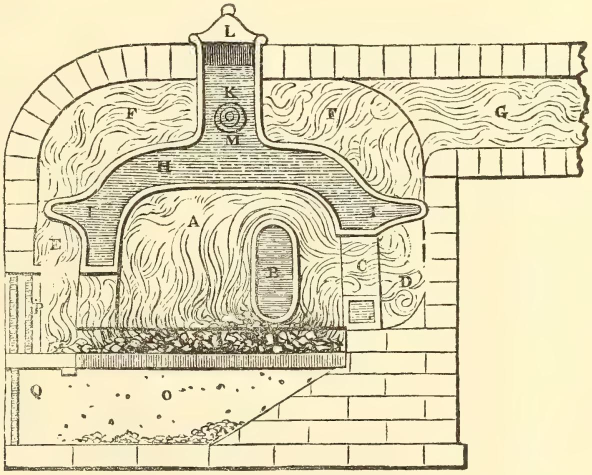


Fig. 3.

Q, either fixed or loose as may be required. M M are two outlet pipes communicating with the upper part of the boiler through which the hot water circulates.

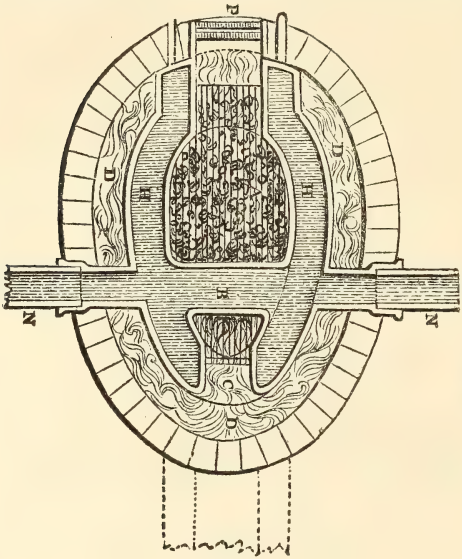


Fig. 4.

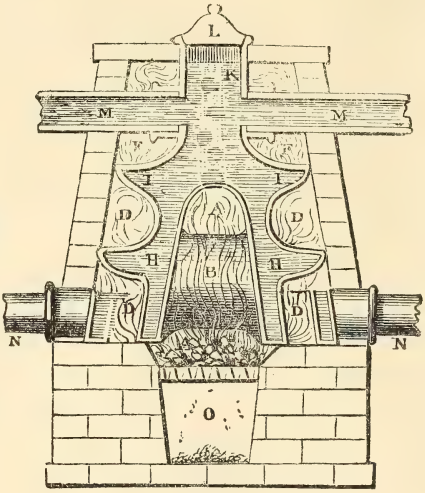


Fig. 5.

After passing away to the outside of the brickwork, the pipes are ramified into two or three branches, as may be required, for warming different houses or separate parts of the building. N N are two return pipes, which enter the lower part of the boiler. O is the ash pit, with a door, Q, to regulate the draught. The furnace has double doors, P, to exclude the external air. In the front of the fireplace, between the furnace bars and door, there is a piece of iron one foot wide, by one to three long, which acts as a *carbonising* plate, and when the fire begins to burn strong so as to heat the iron, nearly the whole of the smoke is consumed.

Figure 5, is a section of a boiler, with an additional flue surrounding the lower part of it, and used for large buildings, or when several houses are required to be heated from the same boiler.

(*To be continued*).

GARDEN ORNAMENTS.

In some of our late numbers we have adverted to certain architectural an sculptured ornaments which are considered suitable for the embellishment of gardens, or to enrich the scenery of the dressed grounds in the vicinity of noblemen's or gentlemen's residences. But where architectural or sculptured edifices cannot be introduced with propriety by reason of the limited space of garden, or for other reasons, there are other substitutes which may very well be admitted, and which would answer the same purpose.

The Chinese are a people who of all others not only cultivate fine flowering plants, but have a pride in growing them in curious and costly porcelain vessels. This seems to have been a very general custom among the nations of southern and eastern Asia; for in the oldest prints of pictures of oriental scenery, we often see represented flowering or fruiting plants placed in pots of various shapes. Vessels for this or any other domestic purpose were manufactured by the potter, whose art was one of the earliest and most useful of the primitive trades. In those countries which were first inhabited by mankind, many of the natural productions required the vessels of the potter for containing and preserving them. Milk and honey, wine and oil, were, with corn and dried fruit, the principal ingredients of the food of man in those days; and various kinds of air and water-tight vessels for these viands were particularly requisite. Consequently the trade of the potter, like all others, advanced from rude beginnings to productions of the most elegant forms and exquisite workmanship.

Nor were such vessels solely confined to domestic purposes; they were employed in the most sacred ordinances, and on the most solemn occasions. Monumental urns were manufactured to receive and preserve the ashes of the dead; or instead of books, were impressed with representations of the actions of illustrious men, or of memorable historical events. Ultimately, not only were the finest plastic earths sought for and employed in such manufactures, but the most precious metals were used to give durability and strength to the productions of the artist.

In process of time these vessels ceased to be made entirely for their original use. Instead of vessels of capacity, they became objects of ornament, and used for the embellishment of both the interior and exterior of buildings of every description. For these purposes the sculptor took up the trade and ingenuity of the potter, choosing the hardest material to accommodate his employer the architect; and the elegant figures which had formerly been formed of clay, were now chiselled out of the finest blocks of marble.

It appears that different nations adopted different forms of these ornamental vessels, or vases as they are now called. Hence we have Grecian, Etruscan, and Oriental vases, each of which have their own characteristic ornaments in relief; and though there are many varieties of each style, all are more or less elegant in outline, and more or less enriched with figures of various flowers and foliage.

Some of these are very costly ornaments, especially if they be models from the *antique*, for these are more highly valued than any modern design, however meritorious. But that the finest forms of antiquity can be chastely and correctly imitated, we have only to refer to what has been so successfully done by the ingenious and celebrated Wedgwood. Still, his ornamental porcelain was too delicate and valuable for common use, and several talented and ingenious potters, of late years, have produced most beautiful clay ornaments for architectural and garden purposes, highly admirable in design and finishing, and ever worthy the attention of those who would embellish their gardens at a small expense.

In order that our readers may be able to judge of the faithfulness of the composition of clay ornaments now manufactured for sale, we subjoin a plate, representing; first, a Grecian leaf-vase, No. 1; a plain Etruscan vase, No. 2; an Oriental Lotus vase, No. 3; a plain Grecian moulded vase, No. 4; and a Gothic column for a horizontal sun-dial, No. 5.

NEW AND RARE PLANTS,

FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR FEBRUARY.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ).

THE EUPHORBIUM TRIBE (*Euphorbiaceæ*).

Euphorbia Veneta. Venetian Euphorbia. The specimens from which the drawing of this fine half-shrubby evergreen plant was made, were communicated by the Hon. W. F. Strangways. It is a trailing plant, growing about two feet high, producing its dingy green flowers from the axils of the leaves. It is found inhabiting the vicinity of Venice, the country about Nice, Genoa, and elsewhere in the same part of Europe. Flowers during the summer months. *Bot. Reg.* 6.

THE MYRTLE TRIBE (*Myrtaceæ*).

Callistemon microstachyum. Small-spiked Callistemon. This is a beautiful New Holland plant, which flowered for the first time in Europe in the garden of William Harrison, Esq., of Cheshunt, in March, 1837. The species is readily distinguished by its spreading narrow leaves and small spikes of rich vivid crimson flowers. *Bot. Reg.* 7.

COMPOSITÆ.

Morna nivea. Snow-white Morna. A very pretty annual, producing its snow-white flowers in the greenhouse from May to August. It grows about eighteen inches high, and was raised in the garden of R. Mangles, Esq., from Swan River seeds. This species differs from *M. nitida*, in the scales of the flower-heads being white and quite entire. *Bot. Reg.* 9.

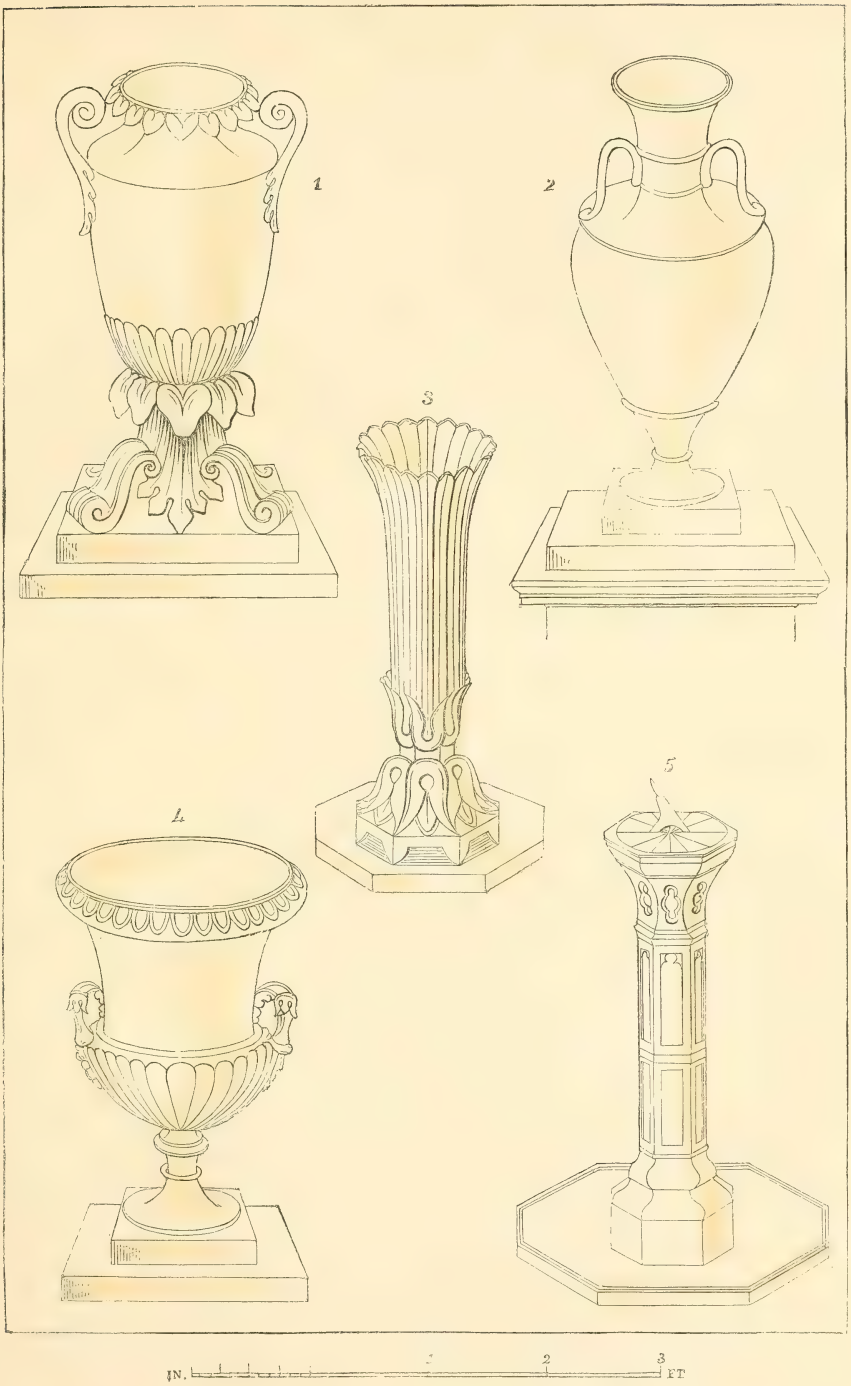
THE BEAN TRIBE (*Leguminosæ*).

Chorozema cordata. Mr. Mangles's Chorozema. A very pretty plant, native of the Swan River colony, and raised in the garden of R. Mangles, Esq. It is a rapid growing plant, being two feet and a half high when only twelve months old, and appears as if it would produce its yellow purple flowers in abundance. It flowered in April. *Bot. Reg.* 10.

LOASACEÆ.

Loasa lateritia. Red-flowered Loasa. A singular and truly beautiful climbing plant, mostly hispid and stringing, especially the slender stem, which is upwards of twenty feet long. It was raised in the Glasgow Botanic Garden, from seeds sent there by Mr. Tweedie, which he collected in Tucuman. The plants

GARDEN ORNAMENTS.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survived in the stove through the winter, and produced their bright orange-red blossoms in May, 1837; since when plants have been trained against an open wall, and produced their flowers in great abundance. *Bot. Mag.* 3632.

THE PAPAU TRIBE (*Papayaceæ*).

Carica citriformis. Small citron-fruited Papaw. Plants of this interesting species were raised in the Botanic Garden, Glasgow, from seeds communicated by Charles Horsfall, Esq., Liverpool, in 1835; and so rapidly does the plant come to perfection that it produced its flowers and fruit the same year. The stem is erect, and upwards of five feet high, with leaves on long petioles from the upper part of it; the yellowish white flowers are in clusters at the axils of the leaves, and the fruit is bright orange, about the size and shape of a hen's egg. *Bot. Mag.* 3633.

THE INDIAN FIG TRIBE (*Cactaceæ*).

Mammillaria Lehmanni. Lehmann's Mammillaria. This plant flowered in the collection of Messrs. Mackie, of Norwich, who observe that it is a "distinct and remarkable species, bearing dark points in the axils of the mammillæ, which in hot weather exude a dark-coloured viscid matter not observable in any other species." The plant grows about six inches high, with terminal flowers of a delicate straw colour and red filaments. *Bot. Mag.* 3634.

THE PASSION-FLOWER TRIBE (*Passifloraceæ*).

Passiflora nigelliflora. Nigella-flowered Passion Flower. A species of Passiflora, raised in the Glasgow Botanic Garden, from seeds collected by Mr. Tweedie, at St. Jago de Estera, in 1835. It is very nearly allied to *P. gossypifolia*, and two or three others, but may be readily known from them by its five-lobed and strongly-serrated cordate leaves; the stem attains the height of several feet, clothed with soft spreading hairs; the flowers are a palish green, the germen and style slightly hairy. Flowers in September. *Bot. Mag.* 3635.

Passiflora Tucumanensis. Large-stipuled Passion Flower. This is a new species of Passiflora, also raised from seeds sent by Mr. Tweedie to the Glasgow Botanic Garden, in 1836, which were found by him in Tucuman in Chili. A glabrous plant with long twinging stems and dark green leaves very deeply three-lobed, with a flower about two inches in diameter; the calyx and petals are white, the inner nectary consists of numerous white filaments tipped with blue; and the filaments of the outer one is white, barred with purplish blue. It flowers in the stove in July. *Bot. Mag.* 3636.

CLASS II.—PLANTS WITH ONE COTYLEDON (MONOCOTYLEDONEÆ.)

THE LILY TRIBE (*Liliaceæ*).

Thysanotus proliferus. Proliferous Thysanotus. Another Swan River plant, raised in the garden of R. Mangles, Esq.; the stem is erect, about two feet high, with long smooth linear leaves, and violet flowers, which are not very showy, but beautifully fringed, which renders the plant rather attractive. *Bot. Reg.* 8.

THE ORCHIS TRIBE (*Orchidaceæ*).

Epidendrum floribundum. Many-flowered Epidendrum. A beautiful species of Epidendrum, communicated by James Bateman, Esq., who obtained the figure from a specimen in the collection of the Messrs. Loddiges, by whom it was imported from Mexico, some years ago: the plant has a long leafy stem, about a foot high, with a terminal branched panicle about four inches long, bearing numerous flowers, each on a long pedicle; the sepals are a greenish brown, petals white, and the lip is white with a curved line of red dots. *Bot. Mag.* 3637.

Cirrhopetalum thonarsii. Insular Cirrhopetalum. A very curious plant, and one of the most extensively diffused of all the epiphytal Orchidaceæ, being found in the Society Islands, in Java, in the isles of France and Madagascar, and in Manilla, whence Messrs. Loddiges received it from Mr. Cumming. The flower stem is produced from the small pseudo-bulb, and is about nine inches long, bearing an umbel of ten or twelve flowers, and nothing can be more singular than the long strap-shaped sepals growing from one side of the flower and almost bearing them down with their weight; the petals are yellow, finely spotted with red, bordered with bristle-pointed teeth, and terminated in a long awl-shaped point. *Bot. Reg.* 11.

VICTORIA REGIA.

"Great interest having been excited by the stories told in the newspapers of this extraordinary plant, the following account has been taken from a memoir upon the subject, of which twenty-five copies only have been privately circulated. Some botanical explanations concerning the genus, not introduced into the original memoir, are here given from such materials as I possess."

"An undoubted addition to a tribe of plants at once so beautiful and so circumscribed as that of the Nymphs, or water-lilies, would be an event of interest even if it only related to a distinctly-marked species of some well-known genus. But when the subject of the discovery is not only a new genus, but a plant of the most extraordinary beauty, fragrant, and of dimensions previously unheard of in the whole vegetable kingdom, except in the colossal family of Palms, an interest must then attach to it, which can rarely be possessed by a novelty in natural history.

"Such a plant is the subject of the following notice:—A Water-lily, exhibiting a new type of structure, of the most noble aspect, of the richest colours, and so gigantic that its leaves measure above eighteen feet, and its flower nearly four feet in circumference. It was met with in British Guiana, in lat. 4° 30′ N., long. 58° W. nearly, by Mr. Robert Schomburgk, a German gentleman, travelling on account of the Royal Geographical Society, assisted by her Majesty's Government, for the purpose of examining the natural productions of that part of the British dominions. In an account of the plant transmitted to the Geographical Society, Mr. Schomburgk speaks thus of his discovery.

"It was on the first of January this year, while contending with the difficulties of nature imposed in different forms to our progress up the river Berbice (in British Guiana), that we arrived at a point where the river expanded and formed a currentless basin; some object on the southern extremity of the basin attracted my attention; it was impossible to form any idea what it could be, and animating the crew to increase the rate of their paddling, we were shortly afterwards opposite the object which had raised my curiosity—a vegetable wonder! All calamities were forgotten; I felt as a botanist, and felt myself rewarded: a gigantic leaf, from five to six inches in diameter, salver-shaped with a broad rim, of a light green above, and a vivid crimson below, resting upon the water. Quite in character with the wonderful leaf was the luxuriant flower, consisting of many hundred petals, passing in alternate tints from pure white to rose and pink. The smooth water was covered with the blossoms, and as I rowed from one to the other, I always observed something new to admire. The leaf on its upper surface is of a bright green; in form almost orbicular, except that on one side it is slightly bent in; its diameter measured from five to six feet; around the whole margin extended a rim, from three to five inches high, on the inside light green, like the surface of the leaf, on the outside like the leaf's lower surface of a bright crimson. The ribs are very prominent, almost an inch high, radiating from a common centre; there are eight principal ones, with a good many others branching off from them; these are crossed again by a membrane or bands at right angles, which give the whole the appearance of a spider's web, and are beset with prickles; the veins contain air-cells like the petiole and flower-stem. The divisions of the ribs and bands are visible on the upper surface of the leaf by which it appears areolated. The young leaf is convolute and expands but slowly. The prickly stem ascends with the young leaf till it has reached the surface; by the time it is developed, its own weight depresses the stem, and it floats on the water. The stalk of the flower is an inch thick near the calyx, and is studded with sharp elastic prickles, about three quarters of an inch in length. The calyx is four-leaved, each sepal upwards of seven inches in length and three inches in breadth; at the base they are white inside, reddish brown and prickly outside; the diameter of the calyx is from twelve to thirteen inches; on it rests the magnificent corolla, which, when fully developed, completely covers the calyx with its hundred petals. When it first opens, it is white, with pink in the middle, which spreads over the whole flower the more it advances in age, and it is generally found the next day altogether of a pink colour; as if to enhance its beauty, it is sweet-scented. Like others of its tribe, the petals and stamens pass gradually into each other, and many petaloid leaves may be observed which have vestiges of an anther. The petals next to the leaves of the calyx are fleshy, and possess air-cells, which certainly must contribute to the buoyancy of the flower. The seeds of the many-celled fruit are numerous, and imbedded in a spongy substance. We met the plants frequently afterwards, and the higher we advanced the more gigantic they became: we measured a leaf which was six feet five inches in diameter, its rim five inches and a half high, and the flower across fifteen inches. The flower is much injured by a beetle (Trichius sp. ?), which destroys completely the inner part of the disk; we have counted from twenty to thirty sometimes on one flower.'

"Some drawings were sent home by Mr. Schomburgk, in illustration of the previous account. He considered the plant a species of the genus Nymphæ, and was desirous that it should be distinguished by the name of the Queen, a wish with which Her Majesty has been graciously pleased to comply. But it proves, upon an examination of the drawings and papers which the Royal Geographical Society has placed in my hands for publication, that the plant is not a Nymphæa, as Mr. Schomburgk supposed, but a new and well-marked genus; for this reason, it appears to me that the object of its discoverer will be best attained by suppressing the name of Nymphæa Victoria by which he had proposed to distinguish the plant, and by embodying Her Majesty's name in the usual way in that of the genus. I have therefore proposed to name it Victoria Regia.

"This noble plant corresponds with the genus Euryale in the spiny character of the leaves and stalks, and to a certain extent in the great development of the former organs; but it is in fact most nearly allied to Nymphæa itself.

"At the time this was written I knew nothing of the plant beyond what could be learned from Mr. Schomburgk's description and figures; these however contained abundant evidence upon which to establish a genus. I was therefore a little surprised to find, soon after the account above quoted had been printed, that either this plant or one nearly allied to it had been called *Euryale Amazonica*, by Professor Poppig. In the second volume of the travels of this distinguished naturalist, mention is made of a Nymphæaceous plant of extraordinary dimensions, rivalling the East Indian Rafflesia in size, but far superior in richness of colour, inhabiting the Igarapé River, one of the branches of the Amazons. The leaves are described as covered with prickles on the under side, the flowers snow-white, purple in the middle, and from ten to eleven English inches in diameter. It flowers in December and January, and bears in Ega the name of Mururú.

"It is impossible not to recognise a plant extremely like Victoria in this sketch; and I cannot doubt that the Mururú is either the very same, or a nearly allied species. That Professor Poppig was wrong in referring this plant to Euryale must have been evident to any one acquainted with Roxburgh's detailed description of that genus, and has been rendered still more certain in consequence of the Royal Geographical Society having received from Mr. Schomburgk some flowers sent over in salt and water. I am indebted to the liberality of the Society for these specimens, which although in a very decayed state, in consequence of the manner in which they were packed, are botanically examinable; and they show that Victoria is not only quite distinct from Euryale, but highly curious in structure. They moreover confirm Mr. Schomburgk's account of the size of the flowers, for one of the expanded calyxes measured fourteen inches in diameter, and an additional inch for the overlapping of the petals is little enough to allow.

"With regard to the genus: Euryale is an East Indian water-plant, with very large floating leaves, sometimes as much as four feet in diameter, bright purple underneath, and there reticulated with numerous very large prominent veins. It is moreover covered with sharp prickles on the under-side of the leaves, the leaf-stalks, flower-stalks, and calyx. In these particulars it agrees with Victoria, and in little else.

"Victoria has the inner petals rigid, and curved inwards over the stamens, into which they gradually pass; in Euryale there is no transition of this kind.

"In Victoria there is no double row of horn-like, stout stamens, curving over the stigmas, and adhering firmly to their back; Euryale has no such structure.

"Victoria has 36 cells to the ovary, and about 28 ovules to each of its cells; Euryale has only from 6 to 8 cells, with 6 to 10 ovules in each.

"And finally, the ripe fruit of Victoria lies at the bottom of a regularly truncated cup, which stands high above the water, while the blossom of Euryale sinks into the water after flowering, and the fruit when ripe is invested with the irregular decayed remains of the calyx and corolla." *Bot. Reg.* 9.

OPERATIONS FOR MARCH.

We earnestly entreat the cultivator to be more than ordinarily active during this and the succeeding month, as his success in the ensuing summer depends in no small degree upon the exertion made at this season; indeed, this may justly be said to be the most important and eventful period of the whole season with the practical gardener. In the stove, orchidaceous plants require cleaning, propagating, and potting; no part of this family should be shifted till all insects, accumulations of dust, &c., are carefully cleaned off. In propagating, take off only the back pseudo-bulbs, or stems, and never do this unless the plant be furnished with a good number of these, say from six to twelve. In potting, drain efficiently, as nothing can be worse for orchidaceous plants than *stagnant water*, and intermingle peat and broken pots with the old roots.

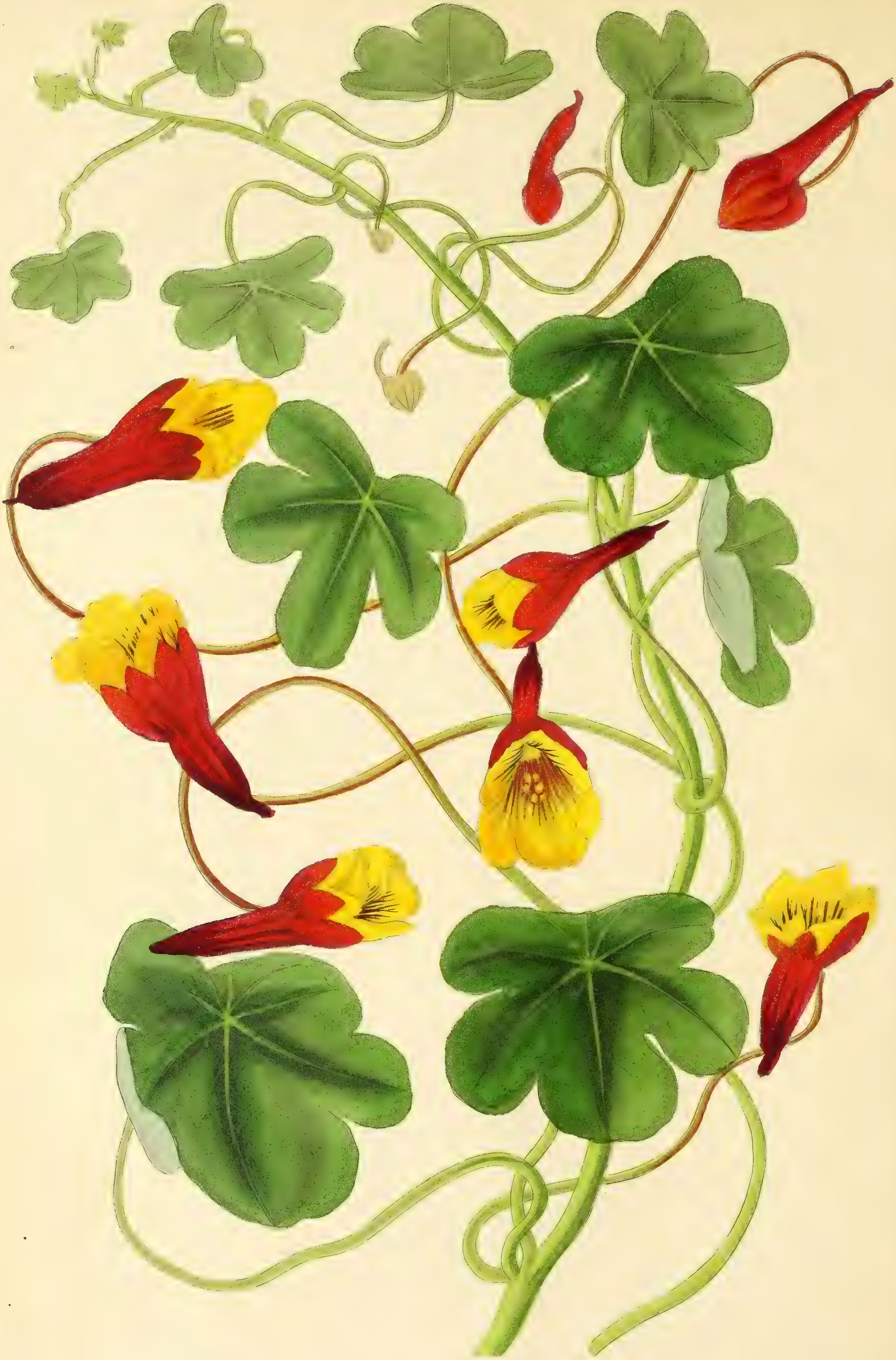
Stove or dicotyledonous plants should now be cleaned, dressed, and potted; scale, thrip, and other insects that infest these plants, should be cleared off, and if time admits, the plants will be better if cautiously spunged over with soft-soap water. Some will require pruning, and cuttings made of the portions taken off, and potting will more or less extend to all, in short all should be examined; the fast and strong-growing kinds should have a large shift, and the less luxuriant only must be potted in proportion as they may require; drain cautiously in every instance, and modify the soil, as far as experience has taught, to the constitution of the plant intended to grow in it. Sow seeds in pots in very light soil, and plunge them in a moderately heating hotbed, taking care not to cover them too deep, as they do not vegetate so freely if buried much below the surface; this is frequently too lightly thought of, especially by those who are accustomed to sow newly imported seeds. Propagation by cuttings, grafting, &c., should now be performed where necessary.

GREENHOUSE.

Potting is of the first importance in this department at this season. Camellias, if not potted in the autumn, should now be attended to; they may be placed in good sandy loam and peat, the former in the proportion of two to the latter. Until they begin growing, they should have very little water, but when they have fairly started, they may have a more liberal supply; they should also be syringed, or watered over the leaves and branches with a fine rose: cuttings should now be put in under a hand-glass, in a warm close frame, and after they are rooted they must be gradually hardened. New Holland plants, Ericas, Rhododendrons, Geraniums, &c. &c., should now be potted if they require it. Mix and proportion the soil, according as the plants intended to grow in it require, such as light loam and leaf-mould for Geraniums, sandy loam and peat for Rhododendrons, sandy peat mixed with free or grit stone for Ericas, and loam, peat, or loam and peat mixed, for New Holland plants. Prune, dress, and clean, when required. Propagate by cuttings, and sow seeds of desirable kinds on a gentle hotbed. All succulent plants should be examined, and fresh potted if necessary. Water this family with caution until they commence growing, when they will require a more liberal supply.

FLOWER-GARDEN.

Planting and sowing seeds in the flower-garden, should occupy the gardener's attention during this month. Roots preserved through the winter, such as Anemone, Anomatheca cruenta, and Ranunculuses, should now be planted out, if not previously done. Self-sown annuals, that have stood the winter, should be thinned, and some transplanted to other parts of the garden. Stocks of all kinds, and Mignonette to blow early, should be sown in pots or boxes. Hardy annuals may be sown towards the latter end of the month; and biennials, such as Rocket, Alyssum, Hollyhocks, &c. &c., about the same time. Perennials should also be sown. Tender annuals should be sown on a mild hotbed, to be in readiness for transplanting when the season permits. Provide, by immediately propagating in a little heat, a good stock of Verbenas, Petunias, Salvias, Fuchsias, Heliotropiums, Scarlet Geraniums, Gesneria Sellowii, &c., for turning out in the flower-garden about May, when all danger from frost is over. Florist's flowers should be watched, and protected on very severe nights. Dahlia cuttings should be brought forward, and all old roots, which are desired to be propagated, should be brought from their winter quarters, and placed in heat.



APRIL 1. 1836

Tropæolum tuberosum

TROPÆOLUM TUBEROSUM.

(TUBEROUS-ROOTED TROPÆOLUM.)

CLASS.
OCTANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
TROPÆOLEÆ.

Generic Character.—See vol. ii. page 193.

Specific Character.—*Root* tuberous, perennial. *Stem* climbing, strong, of a pale green colour. *Leaves* alternate, of five unequal lobes. *Lobes* obovate, obtuse, slightly glaucous beneath. *Leaf-stalk* from four to five inches long, curved at the base. *Flower-stalk* from six to nine inches long, produced at the axil of each leaf, of a beautiful greenish purple colour, and transparent. *Calyx* of an orange colour, five-cleft, spurred ; segments blunt. *Petals* five, deep orange, inserted in and rather longer than the calyx, striped with brown at the base. *Filaments* purple. *Germen* three-lobed.

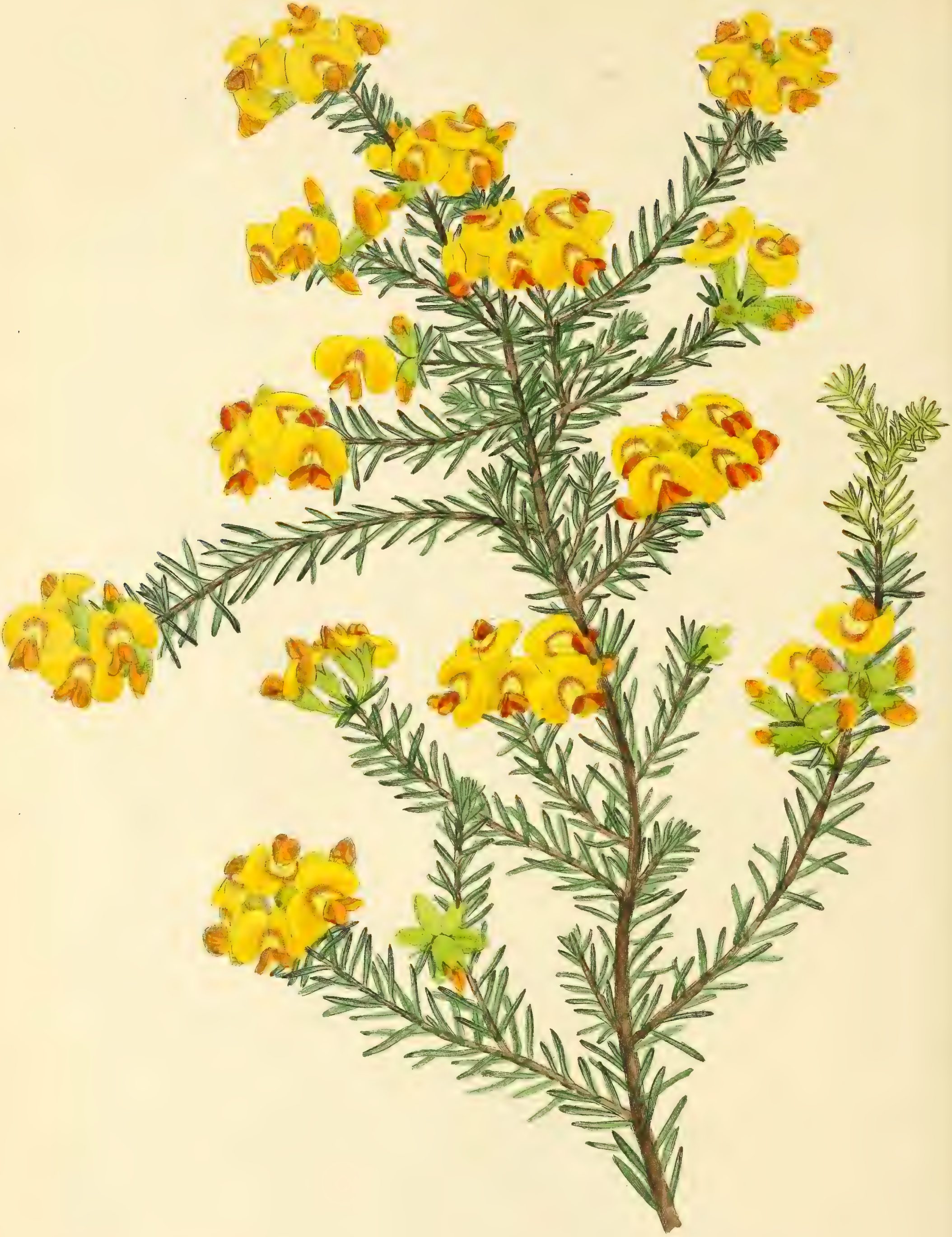
Of the many elegant and interesting species of this genus already known in our collections, some of which, especially *T. tricolorum*, have become such universal favourites, the one now for the first time figured, far surpasses all others with which we are acquainted. Although some years have elapsed since it was first introduced to this country, and although during that time it has been cultivated in many collections, we are not aware of its ever having produced its flowers in perfection previous to the time at which we obtained the present drawing. This can only be accounted for by the circumstance of its never having been properly treated ; as most persons who possess it have supposed it to be a greenhouse species, and consequently have kept it in pots, in a greenhouse or frame. This opinion has now been proved to be quite erroneous, as will be perceived from the following facts.

In the early part of the summer of 1837, Mr. Young, of Epsom, from a laudable desire of ascertaining the true habits and disposition of this plant, caused a number of plants of it to be placed out in a bed in the open ground ; as soon as they began to grow, a few bushes were placed in the ground round each plant, and in the course of the summer they grew so vigorously and luxuriantly, as completely to cover the bushes which had been placed for their support ; and each plant formed a dense mass of verdure, four feet high, and full six feet in diameter. This, compared with the weak and stunted manner in which they had grown while kept in pots, was considered perfectly astonishing; still not the slightest disposition to produce flowers was discovered. However, about the latter end of September the flowers began to exhibit themselves from the axil of each leaf, and in the month of October, each plant was most profusely studded with its elegant blossoms. It is worthy of remark, that Nature seems to have furnished this plant with long flower-stalks for the purpose of displaying the flowers; for, although the plants might truly be said to be literally covered with blossoms, every flower protruded itself beyond the leaves and branches, and stood out boldly and advantageously to view: it is needless to add that the effect produced was beautiful beyond description.

Some slight frosts occurring in the latter end of October, without injuring this plant, it was considered that it would prove quite impervious to the influence of cold; but a more severe one coming in November, the stems and foliage were completely destroyed, just as the flowers had attained the highest degree of perfection; and it was then deemed prudent to remove the tubers from the soil, and preserve them through the winter in a dry and dormant state. This should teach us, that to ensure an abundant display of flowers without subjecting the plants to injury from frost, they should be planted out early in the spring; in which case they would doubtless form a most brilliant and attractive feature in the flower garden during the summer and autumnal months.

This plant may be propagated freely from cuttings, although the tubers are produced very abundantly, and each tuber will make an excellent plant. These tubers are also edible, and Mr. Young informs us, that they are, when boiled, superior in flavour to any potato, though they are disposed to be watery, and do not boil firm. Plants kept in the greenhouse produced their flowers very scantily, and many of them did not flower at all. This is one of the many beautiful plants introduced by Mr. Drummond from the Texas, to the Glasgow Botanic Garden, about the year 1834, from which establishment it was received by Mr. Young of Epsom, and our drawing was obtained from this gentleman in the month of October, 1837.

Mr. Young possesses a considerable stock of it, from whom it may be obtained at a very cheap rate. The specific name alludes to the character of the roots.



[illegible] 1838

Aotus ericoides.

AOTUS ERICOIDES.

(ERICA OR HEATH-LIKE AOTUS.)

CLASS.	ORDER.
DECANDRIA.	MONOGYNIA.

NATURAL ORDER.
LEGUMINOSÆ.

GENERIC CHARACTER.—*Calyx* five-cleft, bilabiate, bractless at the base. *Petals* and *stamens* deciduous. *Ovary* two-seeded. *Style* filiform. *Legume* two-valved. *Seeds* without a strophiola.

SPECIFIC CHARACTER.—*Leaves* linear, very acute, hairy. *Flowers* solitary, axillary, appearing in axillary racemose spikes along the branches. *Branches* clothed with cinereous spreading hairs. *Don's System of Gard. and Botany.*

SYNONYME.—*Aotus villosa. Bot. Mag.* 949.

THERE is not, we conceive, a more interesting class of plants to the general cultivator, than that usually denominated "greenhouse plants;" among which we find objects of the most varied habits, and the most extensive diversity of form, colour, and beauty; but, amidst the almost innumerable species now cultivated in our collections, many beautiful and ornamental plants are discarded merely because they are *old*, or, in other words, because they have been known in this country for many years.

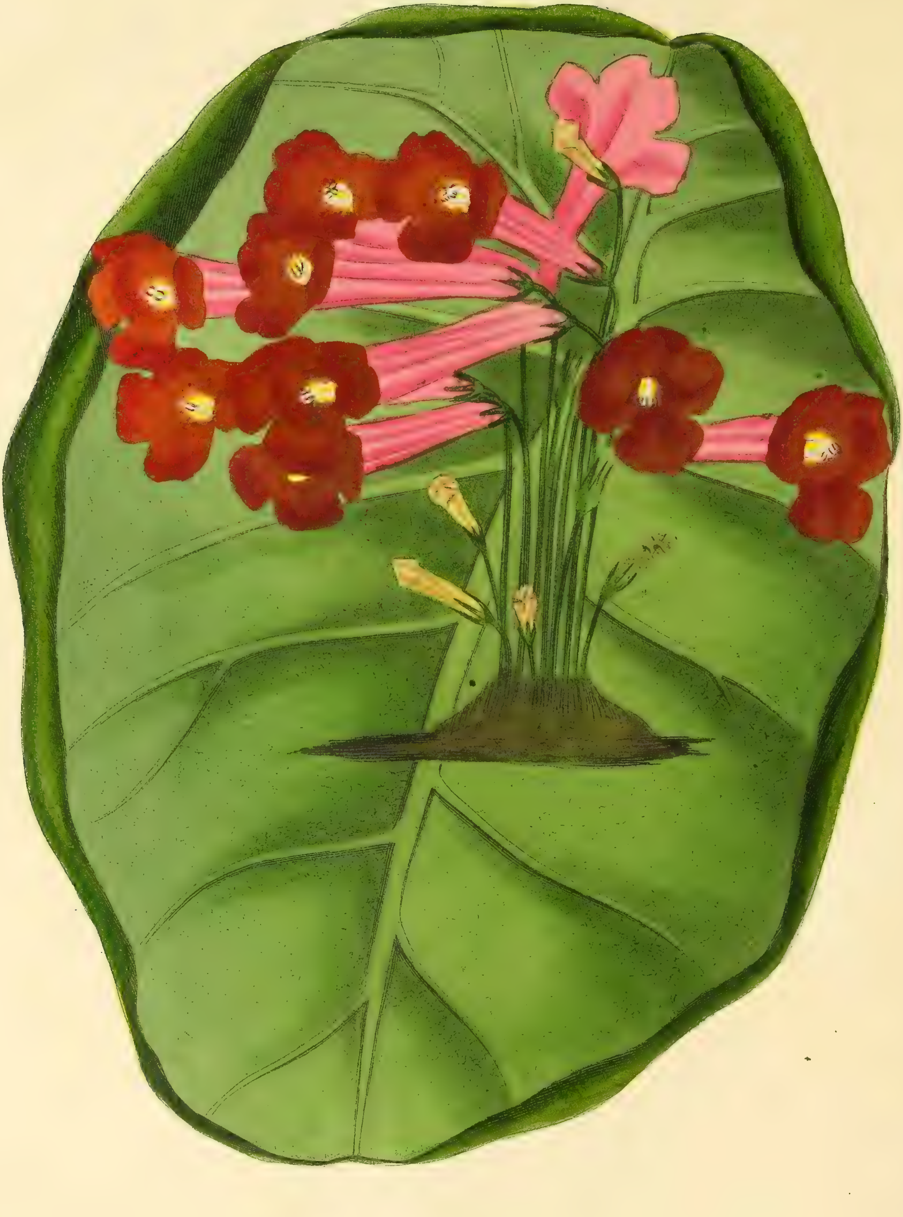
Of this description is the plant now before us, which, when in flower, has an exceedingly pretty appearance in the greenhouse, as its neat yellow blossoms form a very pleasing contrast to the slender heath-like foliage, and is certainly worthy of a place in any collection.

This plant may be cultivated successfully accordingly to the common treatment given to greenhouse plants; but, like the numerous species of the genus *Erica*, to which its foliage bears such a striking resemblance, great care is necessary with regard to the operations of potting and watering. In potting plants of this description, we cannot too frequently urge upon our readers the importance of allowing a sufficient quantity of drainage, and of mingling small pieces of grit-stone with the soil; for, unless these points are duly and properly attended to, it is impossible to attain any degree of perfection in the cultivation of such plants as the present, as nothing can be more injurious to them than sour and stagnant water about the roots. Besides the above particulars, much depends upon the manner in which the soil is placed about the roots; this should neither be pressed down too closely, nor left too loose, either of which extremes would be more or less prejudicial to the plants. Watering is likewise of great importance, and should never be administered unless there is absolute necessity for it, which is usually indicated by the appearance of the surface of the soil; for, from some almost indescribable cause, the best potted plants will sometimes retain an undue quantity of moisture about the roots, and in no case should water be supplied where the soil is already wet.

Cuttings of the young shoots may be propagated without difficulty, by placing them in sand under a glass, with a slight bottom heat. Seeds are sometimes produced, and would doubtless vegetate, though multiplication by cuttings is a far more speedy and effectual method, as the seeds of plants of this description frequently require a year or more to induce them to germinate.

The generic name is taken from *a*, privative, and *ota*, ears, in allusion to the absence of appendages in the calyx.

The specific name refers to the similarity of the leaves to those of most of the species of *Erica*.



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Gesneria rupestris.

GESNERIA RUPESTRIS.

(ROCK GESNERIA.)

CLASS.
DIDYNAMIA.

ORDER.
ANGIOSPERMIA.

NATURAL ORDER.
GESNEREÆ.

Generic Character.—See vol. i. p. 224.

Specific Character.—*Plant* perennial. *Root* tuberous. *Leaves* radical, roundish, rugose, somewhat concave, rarely more than two or three in number. *Leaf-stalk* round, from three to four inches in length, strong. *Flowers* solitary, produced very abundantly. *Peduncles* radical, slender, from two to three inches long. *Corolla* tubular, campanulate. *Limb* five-parted, segments regular. *Calyx* five-parted. *Ovary* egg-shaped, many-seeded.

Numerous as are the splendid species of this genus already known and esteemed in our collections, we imagine that the plant from which the accompanying drawing was taken, contains sufficient merit to excite a lively degree of interest and admiration in the breast of every lover of floriculture. The peculiar neatness, simplicity, and beauty, of its appearance and habits, the profuse display of its pretty blossoms, the great length of time they remain expanded, the astonishing rapidity with which fresh flowers are produced after the old ones have faded, and the striking contrast that is presented between its large and handsome foliage and its elegant blossoms, entitle it to more than ordinary attention and regard, and render it at once both interesting and valuable. The following admirable lines by an esteemed author will be read with interest in this place—

> " These are thy glorious works, thou Source of good,
> How dimly seen, how faintly understood!
> Thine, and upheld by thy paternal care,
> This universal frame, thus wondrous fair;
> This power divine, and bounty beyond thought,
> Adored and praised in all that thou hast wrought,
> Absorbed in that immensity I see,
> I shrink abased, and yet aspire to Thee;

Instruct me, guide me, to that heavenly day.
Thy words more clearly than thy works display;
That while thy truths my grosser thoughts refine,
I may resemble Thee, and call Thee mine."

Of its native country we are unable to furnish any authentic information, it having been received by Messrs. Rollison, Tooting, from the Berlin Botanic Garden, in 1835, without any particulars relative to this subject.

The species we are now noticing, and which is now we believe for the first time figured in this country, differs materially from the majority of its allies, in producing its leaves and flowers directly and immediately from the root; and on this account it forms a very interesting and attractive feature in a collection of stove plants, being admirably adapted for placing on a small stage in the front of the stove, or any other conspicuous situation.

There is not the slightest difficulty attendant on its cultivation, as it merely requires the ordinary treatment bestowed on the other species of this genus; that is, to be potted in a rather rich soil, and kept in a humid part of the stove, where it should be liberally supplied with water during the summer season, but sparingly and cautiously in the winter. It usually produces its flowers in the month of July or August, and will sometimes continue flowering till December; but from what is at present known with respect to its habits, very little reliance can be placed on the time of its flowering, as it is seen exhibiting its elegant blossoms at almost any season of the year.

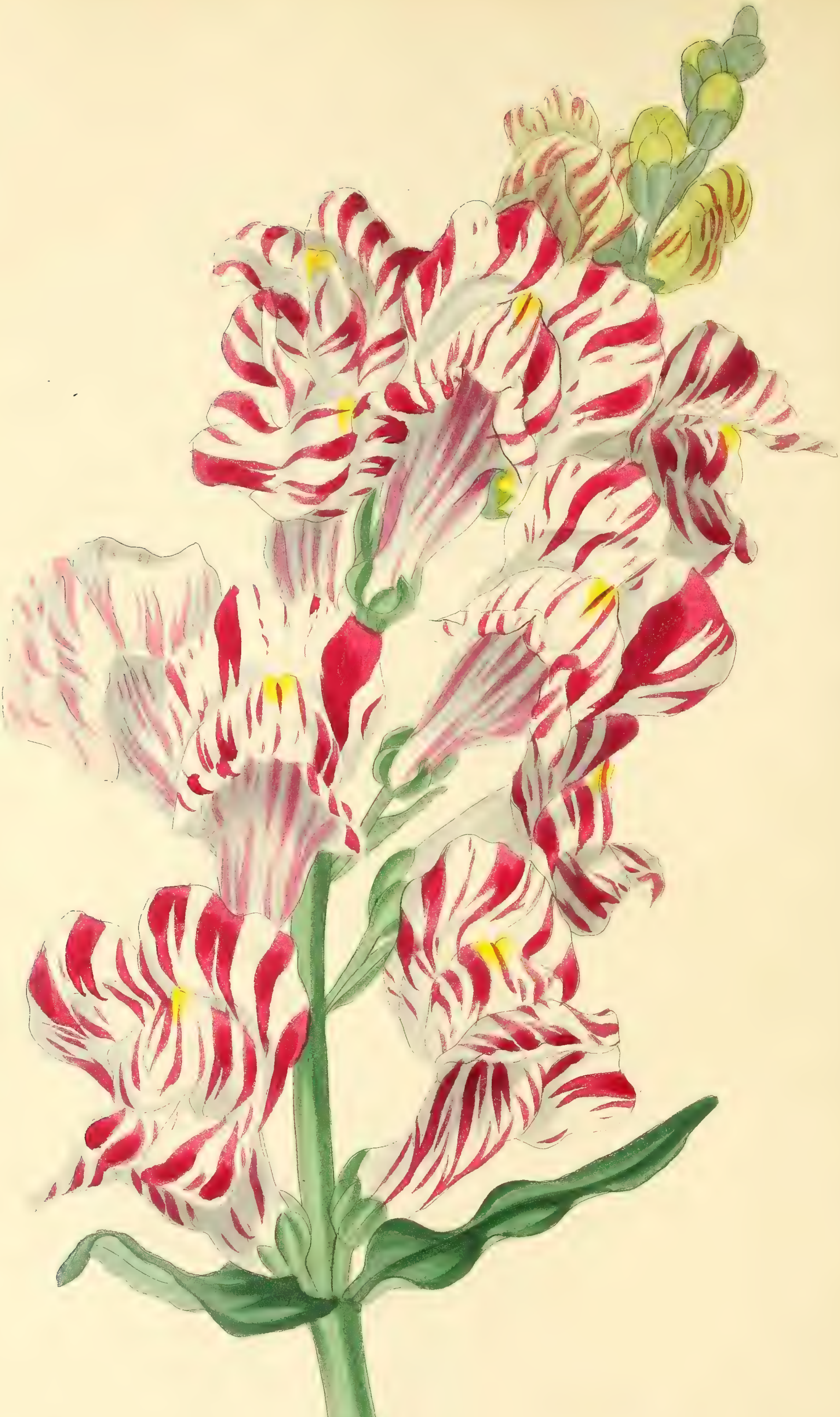
It may doubtless be propagated from the leaves, although, as far as we are aware, this assertion has not yet been proved; it also appears highly probable that it will ripen seeds so as to be capable of producing fresh plants from them.

We are obliged to Messrs. Rollison of Tooting for the opportunity of figuring this beautiful little plant, from whom we obtained our drawing in the month of August, 1837; and we have great pleasure in thus introducing it to notice, as one which is highly worthy of extensive cultivation.

Messrs. Rollison we believe possess a few plants of it, as also does Mr. Young, Epsom, from either of which establishments it may be obtained.

The generic name was given in honour of Conrad Gesner, an eminent botanist of Zurich, and this genus is the type of a small natural order.

The specific name alludes to the locality in which the plant was first discovered, which we presume was on rocks, or other similar situations.



APRIL 1 1838

Antirrhinum caryophylloides.

ANTIRRHINUM MAJUS CARYOPHYLLOIDES.

(CARNATION-LIKE SNAPDRAGON.)

CLASS.	ORDER.
DIDYNAMIA.	ANGIOSPERMIA.

NATURAL ORDER.
SCROPHULARINEÆ.

Generic Character.—*Calyx* five-parted. *Corolla* ringent, closed by a projecting palate, protuberant (gibbous) not spurred at the base. *Capsule* with an oblique base without valves, and opening at the extremity by three pores.

Specific Character.—*Plant* an evergreen herbaceous perennial from one to two feet high, mostly with large purplish-red, but sometimes nearly white, flowers. *Leaves* alternate lanceolate, uppermost opposite, smooth. *Flowers* produced in spikes. Segments of *calyx* ovate blunt.

Var. caryophylloides.—*Plant* more bushy and compact than the parent species. *Flowers* white, beautifully striped with red.

The subject of the accompanying drawing is a very fine variety of a plant with which most of our readers must be familiar, as it abounds on decayed walls and the ruins of old buildings in this country. Our gardens have already been enriched with many beautiful varieties of this plant, but the one here figured is far superior to any we have previously seen. It differs from all others in the colours of its flowers, which approximate in beauty to the choicest carnation; although, in this respect, it is exceedingly liable to sport, being occasionally found with pure white flowers, and sometimes merely spotted with red; but generally they are striped in a similar manner to a carnation, from which circumstance it derives its name.

This is an extremely elegant and showy border plant, and, if proper attention is bestowed with regard to its cultivation, may be made to flower from the commencement of the spring till the close of the autumn; thus ornamenting our flower gardens nearly the whole of the year. The following brief directions will be found useful for effecting this purpose. In the month of September, cuttings should be taken of the young shoots of those plants which are growing in the open border; and after planting them in pots, in a light soil, they should be placed in a slight heat till they have struck; when they should be potted singly into small pots, and kept in a gentle heat till they have become established, and then removed to a greenhouse, and afterwards to a cold frame; where they may be kept through the winter, with a trifling protection from frost.

Early in the spring they will require shifting into larger pots, and as soon as the weather will permit, they should be planted out into the open border, in which situation they will speedily produce their flowers. As soon as the plants above mentioned have formed lateral shoots, a few of these should be taken off for cuttings, and struck in a similar manner to those before alluded to. Again, other cuttings may be taken off each month, and by this practice a continued succession of flowers may be obtained. Besides this, the plants should never be suffered to ripen their seeds, and if the flowers are constantly plucked off as soon as they begin to decay, an abundance of new flowers will speedily be formed. This plant will not endure the open air in the winter months, therefore it is better to raise young plants each season in the manner above directed, more especially as these latter will flower in much greater perfection than the old ones. Plants of it kept in pots in the greenhouse will have a truly interesting appearance, and flower very abundantly at almost all seasons of the year.

We obtained the present drawing from the garden of Mr. F. W. Smith, of Brixton, Surrey, a most zealous and spirited amateur cultivator, in September, 1837. Not having received any authentic information as to when or where this plant was raised, we will not state mere conjecture.

Plants of it may be obtained of Messrs. Young, Epsom, or any of the London and country nurserymen, at a moderate cost.

The generic name is taken from *anti* like, and *rhin* nose, in allusion to the snout-like appearance and structure of the flowers.

ON

THE RELATIVE MERITS OF IRON AND WOOD ROOFS, FOR STOVES, GREENHOUSES, &c.

(*Continued from page* 40.)

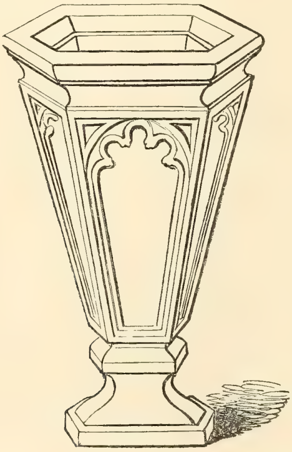
Having I think fully shown the advantage possessed by wood over cast-iron in these very essential points—the better growth of plants and the saving of fuel, glass, and labour,—I shall now add to these observations a few words on the various systems of heating houses, that is to say, by common flues, with steam, and by the circumvolution of hot water. The last-named method is now become very general, and is admitted by all scientific men to be the best, because it is the safest, the most certain, and no doubt, when fitted up on a good principle, it is also the most economical, as regards the expenditure of fuel and the application of labour. Entering therefore on this all-important subject, I shall confine my observations, in the first place, to the advantages of hot water over steam, which are in my opinion many and very great, particularly where coals are expensive; for, to generate steam, an enormous consumption of coal or oven-coke, which is nearly as expensive, is indispensably necessary, as a weaker fuel will be found of no avail. This is the first evil of the steam system; and the second is, that a man's time must be nearly if not wholly taken up in affording that constant attention which is required to keep up the fire. Then, in the third place, there is a considerable loss not only of time but of fuel also, before the pipes become filled with steam. This is a very important fact, to which perhaps due attention has not been paid, for it may not be generally known, that steam travels through the pipes in a time no shorter than it requires to make them nearly as hot as itself; for steam, the instant it comes in contact with a body colder than itself, becomes condensed, and its onward motion is of course impeded. Again, the moment the fire becomes too weak to keep the water at the boiling point so that steam may be generated, it immediately ceases to furnish heat to the pipes, consequently they soon become cold; and this is the fourth evil of heating by steam, which is avoided by the use of hot water, for the instant the fire is ignited and the water gets warm, the particles of the fluid are set in motion, circulation in the pipes commences, and *continues* until the whole of the fluid is consumed, or so long as there remains any heat in the furnace, in the bricks, or in the boiler. Still further, I have proved that pipes each 4 inches in diameter, when filled, the one with water at a heat of 200 degrees, and the other with steam, the one with hot-water would contain a much greater and more enduring body of heat than the one filled with steam; and I have no doubt, that if, when both pipes were heated up to the stated temperature, the fires were suffered to expire, the pipe containing steam would cool as much in one hour, as the hot-water pipe would in six or seven hours.

These facts are stated from accurate observation frequently repeated, and from exact calculations very severely tested; they may therefore be considered to demonstrate in the last place the decided advantages which the plan of heating by the circumvolution of hot water possesses over the rival system of heating by the diffusion of vapour. To the superiority of the water plan as to economy, both of fuel and labour, I may be allowed to bear witness; for during the last fifteen years I have devoted the best energies of my mind to the subject. Throughout that long period I worked four steam boilers, and had under my own eye the direction and application of no fewer than six of the most approved systems for raising temperature by means of hot water. This extensive experience, and the opportunities it afforded of drawing an impartial judgment on the merits and defects of all the systems, added to a natural taste for and love of experiment, directed me to the construction of my economic egg-shaped boiler, which has not only received the direct approbation of every engineer who has witnessed its operations, but is considered by them, and by all who have adopted it, as the most simple and economical of all the plans as yet submitted to the public. So confident am I of its superiority, that I always offer a guarantee to all who employ me to fix it, that I will keep it in repair and take the responsibility of its acting properly for three years, provided that it be fairly used. On such conditions, those who favour my invention cannot run much risk, nor entertain much apprehension as to its efficacy, for *surely* three years will afford them ample time to decide upon its merits. Its chief features are, its expanse of surface, and economy of its arrangement. Aware as I am that any information from practical men explanatory of the cause of improper working in so many hot-water apparatus will be acceptable to all gardeners who have the management of them, and who peruse your truly valuable publication, I will briefly state a few of the principal causes to which failures are attributable, among which none are so difficult to overcome by persons unacquainted with the hydrodynamic principles on which the action of hot water is regulated, than the accumulation of air in the pipes. Indeed unless proper arrangements are made for the escape of air, which is evolved from water when at a boiling point, no apparatus can act properly. Now from some accidental cause, even in the best-constructed apparatus, this air may collect and lodge in the corners or angles of the pipes, particularly when they have to rise and fall; this should be particularly attended to, as the want of due regard and necessary precaution in this particular is in my opinion the principal cause of the many failures with hot water, and the reason why this description of apparatus is sometimes spoken of unfavourably; for I have invariably found from practical experience, that water will not circulate beyond the point where there is an accumulation of air; and the more powerful the attempts made to remove the obstruction by increasing the strength of the fire, the more likely is the apparatus to work improperly, and to cause an overflow of water in the supply cistern. Therefore, as soon as it is discovered by the gardener, or the person having the management of the fire, that the water does not circulate regularly, he should trace it by its warmth along the pipe to the situation where he finds the metal cold, and then in the next bend or angle should he not find an air tap, I should recommend him to procure a blacksmith's drill, and to have a hole made in the pipe, when he will find the air to pass off rapidly, and the water to follow instantly; then should he not be prepared with an air pipe, a small wooden plug would suffice until an opportunity offered to fix one properly, as in all probability it might be many months, and perhaps years, if the cistern be carefully and continually attended to, before such an accident would occur again at that particular point or bend. I would however strongly recommend that in every apparatus ample provision be made for the escape of the air at every bend where it is likely to collect or lodge, for I have witnessed during the time I had the management of six systems of hot water, that from some unknown cause, an apparatus which had worked properly for one or two years would suddenly get out of order, when on tracing the pipes, as before described, as far as I found them warm, I have then, on drilling a hole at the first turn or bend where the pipe began to feel cold, found an accumulation of carbonic acid gas, the heaviest of all the gases, lodged in the angle, and as soon as this was allowed to escape, the apparatus worked as regular as usual. To remove this difficulty, which to persons unacquainted with the cause of the obstruction would appear formidable, nay almost insurmountable, not more than ten minutes were sacrificed; and on interrogating the man who had the management, as to whether he had allowed the water in the cistern to fall below its proper level, I discovered that the derangement had been caused through his negligence and inattention in having suffered the water to sink below the level of the top of the pipes, which of course left a vacuum for this foul air to collect. I would therefore advise all persons when not using the apparatus, either to draw the whole of the water off, or to keep the cistern as full as when in use; this precaution will prevent the air from collecting; but when the boiler is filled again, they should be careful to have the air taps open until the water begins to flow out, or till the boiler is full, to prevent a repetition of the inconvenience. There is also another highly important arrangement connected with hot-water apparatus, a property of the metals which should be attended to with great care,—I mean the allowing a sufficient longitudinal expansion for the pipes on their becoming hot, as it should be borne in mind, that iron pipes when heated to 200° will expand nearly two inches in a length of 100 feet; and as a proof of the necessity of attending to this fact, I may relate a circumstance which fell under my own observation. A few years ago, a nobleman's conservatory in Hampshire was heated with hot water at an expense of between 300 and 400 pounds, and the pipes from the boiler were introduced through the stone that formed the footpath, in which holes were cut just large enough to admit a four-inch pipe, but not of sufficient diameter to allow for the expansion of the metal, and I well remember that in consequence of this oversight, in about fourteen or fifteen different situations where the pipes had to pass through the stone, the joints burst. In each of the eighty feet lengths of pipe, which amounted to about seven or eight lengths altogether, one third of the joints burst after it had been used only three or four times. At intervals they continue to crack to this hour, and will do so until room be allowed for the expansion of the pipes where they pass through the stone. Having thus given a few brief instructions for the management of hot-water apparatus, and knowing that there exists a great diversity of opinion relative to the quantity of water a boiler should contain, and of the dimensions of the water way both in pipes and boiler, so as to secure a regular and lasting temperature, I hope it will not be considered presumptuous in me to offer a few observations on that subject, and leave the impartial reader to decide the question. It is natural that every constructor of hot-water apparatus should be prejudiced in favour of his own peculiar plan—*the child of his own mind.* Hence it is that the prescribed dimensions of the conducting pipes vary from half an inch to five or six inches in diameter, according to the particular plans of different individuals. I shall merely give my own judgment on the proper sizes, without commenting upon any peculiar plan. It is my opinion then that a hot-water apparatus, to answer all desired purposes, should be so constructed as to avoid either objectionable extremes, since pipes of too large or too small dimensions are equally to be avoided, and this for reasons which I could easily adduce, were it not that I desire on this occasion to confine my remarks to boilers formed of series of pipes varying from half an inch to two inches, which I admit have a great advantage over boilers containing large bodies of water, inasmuch as they become hot much quicker. Then it must be recollected, that the larger body when once heated will remain hot twice or three times longer than the other; and I have proved by observation, that a four-inch pipe, which contains double the quantity of water which a two-inch pipe is capable of receiving in a house of the same temperature, will retain its heat for more than double the length of time. When boilers are used that have such small water ways and small pipes, they require more attention, and cannot be left at night with the same safety as boilers and pipes containing larger bodies of water, seeing that the former cools so much more rapidly than the latter. Nevertheless, to err in the other extreme, by having boilers and pipes to contain very large quantities of water, would be a great waste of fuel, and by no means calculated to answer to the satisfaction of all parties so well as a boiler and pipes of a medium size: it is my opinion, therefore, that in neither boiler nor pipes should the water way be less than three inches, nor more than four inches, and the boiler should be so constructed without complication as to expose the greatest possible surface to the action of the fire. This would be found the most economic boiler for fuel and effect; for I have always remarked that the greatest object of persons who heat their houses with hot water is the saving of fuel, &c., which is very considerable when compared with the expense attendant on a badly-constructed flue. Besides, an opportunity is afforded of heating several houses at the same or very little more expense; this I have always considered of the greatest importance, particularly when a gentleman's establishment is situated at a great distance from coal mines; and in all my arrangements with respect to hot water, I have always contrived to have the body of water in the pipes which run through the house, as it is there that the gardener requires a permanent and lasting heat; this it is that induces me to advocate the use of three and four inch pipes. Moreover, there are great objections to the use of small pipes, varying from half an inch to two inches, particularly when the boiler (as is the plan of some) is formed of a series of pipes; in such case their interior becomes in course of time furred up from the incrustation formed from the deposition of the various earthy matters held in solution by the water, which naturally causes an accumulation of alkaline earths, &c. &c., which in time closes up the water way. I have thus freely expressed my opinion on the demerits of pipes of small calibre; but it must not be thence inferred that I shall err on the other extreme, as that would be attended with much sacrifice of fuel to the proprietor and great inconvenience to the gardener. For if boilers and pipes capable of containing unnecessarily large quantities of water are used, there will be a great waste of fuel before any heat is communicated to the house, and perhaps a valuable crop of fruit or plants may be lost, through the gardener not having a proper command of heat, in order to prepare against those alterations in the weather so frequently sudden and unexpected in this changeable and uncertain climate. I have found in the course of my experience and observation, in the months of October, November, and December, more especially, but with less frequency at all seasons of the year, that up to the hour of twelve o'clock at night rain may fall in torrents, and the gardener may naturally conclude that during the night no fires will be required, either for the greenhouse or conservatories, but how great must be his trouble and surprise to find in the morning 8° or perhaps 10° of frost! Now this trouble and inconvenience I have frequently experienced; therefore, for the benefit of all parties, and the protection of plants, &c., I beg to repeat here the opinion I have already given, that for an apparatus to answer all purposes, boilers of medium size, with water ways not less in any part of the boiler than three inches, and not more than four inches, will give the gardener sufficient command of heat, and afford him an opportunity of protecting the perishable property committed to his care without subjecting himself to reproach, which is too frequently unjustly heaped upon him for loss of property through circumstances over which he could have no control. For to limit a gardener to means when much is expected, can only be compared to setting a man to dig who has neither legs nor arms. Having then explained my objections to pipes of too large or too small dimensions, I shall, in concluding these observations, offer a few suggestions relative to the formation of the furnace, and the apparatus generally, as a guide to persons who may not have had quite so much practical experience as myself. And among the first to which I shall draw the gardener's attention, with all hot-water apparatus, it is necessary for his own convenience, and for the benefit of his employer, to see that the mechanic or person who fixes the apparatus supplies a proper-sized furnace door, which should not be less than one foot square, for the convenience of cleaning out, lighting and making up the fire the last thing at night; for it is impossible for any man to manage a fire properly with a furnace door (such as is used for some apparatus) that does not exceed six or seven inches square; but if a good-sized furnace door is used, the gardener is enabled, in countries where coals are dear and wood plentiful, to burn logs of wood, or the refuse from the pruning of trees, when he only wants a little fire through the day; but of course it must be understood that this description of fuel is not to be depended on in severe weather, nor for making up fires for the night. Whatever description of fuel is used, however, I have always found it a great advantage and saving to gentlemen to have a moderately large furnace door; great attention being paid to its formation in order to prevent the passage of air through the furnace door between the boiler and the fire, the neglect of which causes a great waste of caloric or heat, as air will not support combustion until its temperature is raised to 800° or 900° Fahrenheit; therefore a current of cold air admitted between the boiler and the fire through the door has a tendency to counteract the power of the fire, to obviate which double doors should invariably be used, and then if the boiler is so constructed and set as to expose (which is the great secret in the formation of all boilers) a large surface to the action of the fire, by means of the construction of the flues round it in such a way as entirely to consume the whole of the caloric or heat before it escapes at the chimney, the greater will be the saving of fuel, and the more powerful and effective the operations of the apparatus altogether. Between the door and the fire there should be a piece of iron one foot three inches by one foot wide, which acts as a carbonising plate, and when the fire begins to burn strong so as to heat the iron hot, nearly the whole of the smoke is consumed. Indeed I have no hesitation in saying, that if a proper quantity of pipe is used so as to give a sufficient quantity of surface for the command of temperature required in all extremes of weather, and the furnace, boiler, and flues, being constructed as suggested, the fire might be made up and left without the least risk for six or eight hours on the severest nights. In the formation of the *egg-shaped boiler*, my attention was particularly directed to the construction of a furnace that would obviate the evils complained of in most hot-water apparatus: I mean the great consumption of fuel, and the almost constant attention required, all of which arises from badly-constructed fire-places and boilers; but then there are several other circumstances connected with hot-water apparatus which I think highly necessary to be attended to, particularly when the boilers are formed of series of pipes varying from half an inch to two inches in diameter; for in the first place on no account should dirty water be used, as it causes a settlement or accumulation of mud, which in time not only injures the boiler, but lessens its power, not only by preventing the fire from acting immediately on the water, but also because the accumulated deposit impedes the circulation of the fluid by diminishing the *calibre* of the water way, and ultimately forms a hard incrustation similar to what is seen on the bottom of steam boilers, and it frequently ends in burning a hole in the boiler. Sometimes, in order to save a little trouble, when hard water is more conveniently obtained than soft or rain-water, the boiler is filled with hard water, which is as injurious as mud, for in the decomposition of the water consequent on the process of boiling, considerable quantities of earthy particles are deposited at the bottom; but if rain water is used, all this injury is prevented, as I have on several occasions examined boilers that had been taken down after being in use for ten or more years, and when this important particular had been properly attended to, there has scarcely been any appearance of incrustation. Moreover, in all plans of boilers, there should be a small cock so placed as to draw the whole of the water off occasionally for the purpose of cleaning the boiler, &c., as it is well known that water, when heated, not only evolves or gives out its component gases, but, by mechanical deposition, any matter held in solution in the water falls to the bottom and causes a sediment on the boiler; by the use of rain, or, if convenient, filtered water, all this difficulty is overcome. There is also another difficulty attending the use of hot water, which, if properly attended to in the first place, would not be such a perpetual inconvenience, viz., when water has to descend under doorways, &c., or to dip below the bottom of the boiler, I have frequently known several plans of hot water, which are admitted to be good in themselves, prove of no service in the cases described; nay, it has even been found necessary to remove them in consequence of the water not circulating under the paths and other situations where it was necessary to descend and rise again: all this might have been avoided by giving the flow-pipe a proper ascension when leaving the boiler, and by placing the reservoir or cistern sufficiently high, so as to counteract the power of the water in the return pipes. I was sent for last spring to remove an apparatus in a lady's greenhouse at Westerham in Kent, which could never be made to act under the door, and I succeeded, very much to the lady's satisfaction, in causing the water to descend in both flow and return pipes to more than two feet below the level of the bottom of the boiler, after which it had to rise again to above the level of the top of the boiler. The lady's name I have permission and authority to communicate to any person wishing to inspect the apparatus, and being so perfectly satisfied with its working now, she has kindly offered to answer any inquiries. In concluding these few practical instructions or observations on the relative properties of common flues, steam, and hot water, I shall merely state that during my practice I have always considered hot water a much more congenial heat for plants and all other organised bodies, whether belonging to the vegetable or animal kingdoms, from their close analogy, and the circumstance of its containing less of the noxious gases, which escape not only from the surface of the flue but from all the fissures, however well the flues may be built, for it is impossible to confine this light and subtle fluid. Again, as the temperature of hot-water pipes is more equal than a flue at both extremities, and rarely exceeds 200° of heat, there is not that exhaustion of the aqueous or humid gases, which are so essentially necessary to the very existence, much more to the health and fruitfulness of all plants, whether natives of torrid or frigid climates, as nothing can tend more to the injury of plants and to the generating of insects than an arid atmosphere highly charged with unwholesome and extraneous gases; and as strong fires applied for heating hothouses with common flues dry up all humidity, and decompose those nutritious gases with which the atmosphere is charged, and which are so beneficial to the health, growth, and cleanliness of every description of plant, it is only just to infer that a flue,—which is continually destroying, by its intensity of dry heat, the very vitals of all plants, namely, the humidity of the air in which they are growing, besides evolving the disagreeable smell so common to flues when hot, which arises from the decomposition of the animal and vegetable particles continually floating in the air,—cannot be so congenial to the vegetable kingdom as a mild, gentle, and regular heat, such as is produced by hot water, which fluid is free from all the noxious gases given out from the smoke, soot, lime, and bricks, of a common flue.

J. W. THOMPSON.

A CAST-IRON ORNAMENTAL FLOWER VASE.

THE present design was communicated some time since by Mr. Saul, of Lancaster, who recommends it as suitable for planting Dahlias and other plants in, that have been raised in pots. The vase should be placed in the flower garden or on the lawn, and the plants when they come into flower should be moved to the inside of the vase, where, if properly adjusted, they would no doubt produce a very ornamental effect. To increase the interest of such an object, three tall free-flowering plants of different species with different coloured flowers should be brought together in the vase, which would render it still more interesting. This vase, Mr. S. informs us, is made at a trifling cost, and not being very heavy, might be sent to any gentleman's establishment with little expense.



NEW AND RARE PLANTS,

FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR MARCH.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ).

THE HEATH TRIBE (*Ericaceæ*).

Erica florida; *var.* **campanulata.** Drooping round-headed Heath. A very charming heath, raised from seeds of *E. florida*, and communicated from the gardens of Bothwell Castle. The plant when figured was only two years old, and had attained the height of two and a half feet, producing its beautiful, delicate, rose-coloured terminal flowers, three or four together, forming small umbels at the extremity of the short lateral spreading branches. The plant flowered in May, 1837. *Bot. Mag.* 3639.

Erica chloroma. Green-tipped Heath. This pretty heath was communicated by Mr. J. Young, Nurseryman, Taunton. It forms a handsome, erect, spreading bush, with reddish-brown downy branches; the leaves are in fives, and the beautiful crimson and green flowers are produced in clusters at the ends of the young shoots, on little downy nodding pedicles. This species is very distinct from any found in books. Flowers in November. *Bot. Reg.* 17.

THE BIRTHWORT TRIBE (*Aristolochiaceæ*).

Aristolochia saccata. Pouch-flowered Birthwort. A singular plant, native of Silhet, and imported to the Botanic Garden, Edinburgh, from the Calcutta Garden, in 1829. It is a twining shrub, with very long slender stems, and scattered ovate-cordate leaves, from twelve to fifteen inches long and about four broad; they are entire in the edges; when young they are covered with brown hairs, when old they are less hairy. The racemes rise from the stem near its base; the membranous pendulous flowers are covered with spreading hairs; the tube is yellowish-white within and without; the circular throat is of a bright yellow colour; the upper surface of the limb is dark purple, covered with warts of a similar colour. The plant produced a succession of flowers in September last, but Dr. Graham did not perceive that exceedingly offensive smell for which Dr. Wallich says its blossoms are remarkable. *Bot. Mag.* 3640.

THE INDIAN FIG TRIBE (*Cactaceæ*).

Mammillaria atrata. Dark-green Mammillaria. Another interesting species of Mammillaria communicated from the rich collection of the Messrs. Mackie, of Norwich; with them the plant produces its pretty dark-green flowers in very high perfection. Sir W. J. Hooker says that Pfeiffer, in his useful "Enumeratio Cactearum," refers the *M. atrata* of our gardens to the *M. rhodantha* of Link and Otto, but from that species, says the above gentleman, our plant is wholly different. *Bot. Mag.* 3642.

COMPOSITÆ.

Cosmus scabiosoides. Scabious-like Cosmus. A beautiful and interesting species of Cosmus, found originally by Humboldt and Bonpland on the mountains of Mechoacan. The seeds from which the present plant was obtained were imported from Mexico by George F. Dickson, Esq., and by him presented to the Horticultural Society of London, in whose garden it produced its beautiful rich purple flowers in October. *Bot. Reg.* 15.

THE FIGWORT TRIBE (*Scrophulariaceæ*).

Pentstemon crassifolius. Thick-leaved Pentstemon. A very handsome hardy shrubby species, growing about a foot high, with coriaceous, entire, obovate leaves, and producing its pretty bluish flowers on short hairy racemes. It is a native of the north-west coast of North America, and was raised from seeds sent by the late Mr. Douglas to the London Horticultural Society, in whose garden it flowered in June last. *Bot. Reg.* 16.

CLASS II.—PLANTS WITH ONE COTYLEDON (MONOCOTYLEDONEÆ).

THE ORCHIS TRIBE (*Orchidaceæ*).

Govenia liliacea. Lily-flowered Govenia. A small tuberous plant, with the habits of a Bletia. Its flower-stem is scarcely more than a foot high, and rises directly from the tuber to about the length of the plaited leaves. The flowers are produced in July; they are not a good or pure white, but are delicately streaked upon the petals with lines of rather pale purple. It is a native of Mexico, whence it was introduced by George Barker, Esq., of Birmingham; and is extremely rare, not being in any other collection. *Bot. Reg.* 13.

Epidendrum tesselatum. Chequer-flowered Epidendrum. This pretty species was discovered by Mr. Skinner in Guatemala, and by that gentleman sent to Knypersley in 1836, from whence the drawing was communicated. The pseudo-bulbs are ovate, compressed from the tops, on which long linear lanceolate leaves are produced; the flower-stem rises from the crown of the bulb, and produces flowers with the petals and sepals greenish yellow outside, and brown inside; the lip is beautifully veined its whole length with numerous purple streaks. It flowers in June and July. *Bot. Mag.* 3638.

Dendrobium aggregatum. Close-flowered Dendrobium. This beautiful species of Dendrobium was received at the Botanic Garden, Edinburgh, from Wentworth, and flowered in the beginning of May, 1837. The ovate pseudo-bulbs are about two inches long, with solitary, oblong, coriaceous leaves, twice as long as the bulb; the raceme is about six inches long, protruded laterally from the upper joint; the flowers are very numerous, springing from the axil of a small, acute *bractea;* they are of a beautiful orange colour, darkest towards the base of the lip. The plant is a native of the East Indies. *Bot. Mag.* 3643.

NOTICES OF NEW AND RARE PLANTS

IN FLOWER IN THE PRINCIPAL NURSERIES IN THE VICINITY OF LONDON.

On account of the pressure of other matter, we were, as our readers will have perceived, unable to insert our usual observations on the few plants of interest that were in flower in the London nurseries last month; but we feel assured that they will not be inclined to censure us for this omission, when they take into consideration the severe state of the weather during the month of February, and as a natural consequence, the few flowers that had then been able to develop themselves. For their gratification, however, we shall this month enumerate such plants as were then in flower; or at least, those of them which we consider worthy of attention.

Messrs. Henderson's, Pine-Apple Place. The showhouse of these gentlemen is as usual very attractive, and all such plants as will allow themselves to be forced into flower by being placed in a hothouse or stove, may here be seen in a high state of perfection; any of our readers who reside in the vicinity of London, and who are desirous of obtaining plants in flower at this season for the purpose of ornamenting their parlours or drawing-rooms, may procure an excellent assortment at this nursery, particularly if fine and well-grown plants with an abundance of flowers are wished for. Several remarkably fine specimens of various species of *Epacris* are now most brilliantly in flower, and we have nowhere seen such handsome plants of the elegant species of this highly interesting genus as these gentlemen possess.

Mr. Knight's, Chelsea. A new bulbous plant, nearly allied to the genus *Pancratium*, or *Ismene*, is now most beautifully in flower at this nursery; the flowers are white, of an extremely delicate texture, and most delightfully fragrant, and we should consider that it is without doubt a species of *Ismene;* it was imported by Mr. Knight from Florida last season. *Batemannia Colleyii.* This singular plant is now flowering profusely in the orchidaceous house of this gentleman, and though it cannot be regarded as a first-rate orchidaceous plant, it is well worthy of the cultivator's care. A new and very beautiful *hybrid Rhododendron* is also now in flower in the conservatory of this nursery; it was raised from seed at the same time as *R. arborea fimbriata*, figured vol. ii. p. 98 of this work, but has never flowered previous to the present time; some slight resemblance is discernible between the plant now noticed and the one just alluded to, but a decided distinction is manifest both with regard to foliage and flowers, and this is certainly a valuable variety. *Azalea Indica Smithii.* A splendid specimen of this handsome plant is now flowering in great perfection in the collection of Mr. Knight.

Messrs. Loddiges', Hackney. *Dendrobium fimbriatum.* Two large specimens of this charming plant are now exhibiting their elegant blossoms in the orchidaceous house of these gentlemen, in extraordinary perfection; our readers will form some idea of their beauty when we state, that one of them is producing fifteen fine spikes of flowers, and the other twenty; besides which, the flowers are much larger than any we ever before witnessed in this species. Last month these gentlemen flowered a magnificent plant of *Denbrobium nobile*, which we consider to be the most interesting and valuable species of this genus at present known in our collections. It is even more beautiful than the elegant *D. monilliforme*, the colour of the labellum being much richer, and more strikingly in contrast with that of the sepals, which are of a delicate flesh colour; it is far superior to *D. monilliforme* in habit, as it is a stronger and much more rapid-growing species. The state of perfection to which these gentlemen cultivate the numerous species of *Dendrobium* is we believe unrivalled in any other collection in this country, and the beauty of some of their specimens when in flower can scarcely be conceived. *Lissochilus parviflorus.* This is a new and very interesting species of the genus *Lissochilus*, and was in flower at the above nursery last month, a few flowers still remaining expanded a week since; as its name implies, the flowers are much smaller than those of *L. speciosus*, but the petals and sepals are beautifully pencilled with brown, and it is a valuable addition to this genus. *Pachypodium tuberosum.* This is not a new plant, but is we believe only cultivated in a few collections; it has now been in flower three months, and its pretty red and white blossoms still continue unfolding; it forms a very attractive feature in the succulent house, and is a valuable acquisition to any collection of succulent plants.

Mr. Lowes', Clapton. *Chorizema cordata**. A splendid specimen of this beautiful species was last month in flower at this nursery, and we should imagine that there were at least twenty flower-spikes on it, each of which produced from six to eight flowers, thus making a most brilliant display; it is a very handsome species, and merits a prominent place in every collection, more especially as it appears to be such a profuse flowering plant. *Epimedium violaceum* and *grandiflorum.* These two elegant little plants are now exhibiting their pretty blossoms at the above nursery; the former species has flowers of a delicate purple or violet colour, and those of the latter are white; they are both exceedingly ornamental, and are justly entitled to the attention of every cultivator. They are now flowering in the greenhouse, and we presume they are greenhouse or half-hardy species. *Camellia picturata.* Mr. Lowe possesses the original specimen of this beautiful *Camellia* now in flower; the flowers are of a cream-coloured ground, with numerous small pink stripes, and well formed. A *seedling Camellia* has also recently flowered at this nursery, which will be found worthy of a place in every collection; we understand it is to be called *C. Lawrenciana.*

Messrs. Rollisons', Tooting. *Oncidium ramosum.* A very beautiful new species of *Oncidium* produced its flowers in the collection of these gentlemen last month under the above appellation; like most of the other species of this genus, the flowers are of a greenish-yellow-coloured ground, and liberally mottled with brown, but there is a peculiarity in the structure of the labellum which renders it doubtful as to whether it is a species of *Oncidium*, or whether it might not with propriety be assigned to a new genus: we, however, are inclined to consider it a species of the genus above named, as it resembles the other species in every other particular but the form of the lip; and in this respect it is one of those curious plants which baffle the ingenuity of the most experienced botanists, and teach them the utter fallacy of attempting to prescribe rules for the structure of natural productions, particularly orchidaceous plants. Messrs. Rollison also possess a new species of *Epidendrum* now in flower; the pseudo-bulbs are unusually long and large, but the flowers, though larger than most other species of the genus, are not very beautiful, as brown and pale green are the predominant colours: nevertheless, it is far superior to many, indeed most, other species of this genus. *Phaleonopsis amabile.* This lovely plant is again flowering at the above nursery, and should be in the collection of every lover of orchidaceæ.

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* We have previously noticed this plant under the name of *C. Manglesii*, and our reasons for adopting the present appellation will be given in a future number.

Mr. Young's, Epsom. *Begonia odorata.* This is a rare and very interesting species of *Begonia*, and though by no means equal in beauty to some of its allies, abundantly compensates for this deficiency by the delightful fragrance it exhales, being in this respect equal to the perfume of violets, or that universal favourite, mignonette; the flowers, though white, are not destitute of beauty, and form a pleasing contrast with the little tufts of yellow anthers in their centre, and the deep green of the foliage. Its fragrance alone is sufficient to render it a desirable feature in any collection, and a fine specimen of it is now flowering very profusely at this nursery. *Rhododendron Cunninghamii.* This is an extremely beautiful hybrid *Rhododendron*, raised in the Epsom nursery; the flowers are of the richest crimson colour, and beautifully spotted with black. A splendid specimen of it is now exhibiting its showy blossoms with Mr. Young.

NOTICES ON THE CULTURE OF NEW AND RARE PLANTS

IN THE LEADING NURSERIES IN THE VICINITY OF LONDON.

On Grafting Cactæ.

In a previous number we presented our readers with a few hints relative to a rather novel system of grafting species of *Mammillaria*, *Echinocactus*, &c., on stocks of *Pereskia aculeata*, and we there promised to enter more minutely into the subject in a future article: we find, however, that there are few additional particulars remaining for us to relate, as the operation is remarkably simple. By reference to our February number, our readers will perceive that we have there stated the principle on which this system is founded, *viz.*, that of grafting such kinds as produce few and weak roots, on those which emit strong and vigorous ones; but, as some individuals with small collections would not wish to have the only specimen they possessed of any species treated in this manner, it may not be amiss here to state the most approved and efficient means for propagating the various species of the genera before named. Most of those species of *Cactæ*, which form themselves into spherical heads, do not produce either branches or offsets naturally; therefore it becomes necessary, where an increase is desired to be obtained, to have recourse to some method whereby they may be induced to do so. It is a curious but well-authenticated fact, that each of the little tufts of spines which are so abundantly produced on the projecting angles, or ribs of the plants now under consideration, is a true and proper bud; and if any means are used to excite it into action, is capable of producing a fresh plant. This being the case, all that is required to effect this purpose, is to restrain the growth of the plant in height, either by cutting off its summit, or searing it with a red-hot iron; the latter of which practices is perhaps the best, as by it the plant will not be deprived of any of its sap or juice, which frequently exudes for a long time after this operation has been performed in the former manner. This treatment will speedily cause the tufts of spines, that before had appeared lifeless and useless, to form themselves into shoots or plants; and when they have attained to a sufficient size, they may be taken off carefully, potted into small pots in a light soil, and, with due attention to preserving them from excessive moisture, they will soon produce roots. But our object, on the present occasion, is not to state the method by which these plants may be propagated, merely for the purpose of growing them in soil; but that plants may thus be produced for grafting on stocks of the *Pereskia* before named; for where this system is adopted, there will be no necessity for taking plants out of the soil for this purpose, and depriving them of their roots, as they will not form roots so long as they remain on the parent plant. Where these young plants are broken or cut off with care, and grafted on the above-mentioned stocks in the manner detailed in a former number, they will adhere to the stock much sooner than they would have produced roots if they had been planted in soil, and consequently will more speedily commence increasing in size, and make much more rapid progress afterwards.

In addition to the directions before given for performing this operation, it may be observed that a little moss should be tied round the plant at the junction of the graft with the stock; and this should from time to time be moistened with lukewarm water, but by no means so much so as to render it too wet, which would cause the graft to rot. When the two plants have become perfectly united to each other, the moss may be removed, and it will be found that in addition to to its having accelerated the union between the stock and the graft, it will have induced the graft to throw out strong and excellent roots, which, if the house in which the plants are placed is kept slightly humid, will grow most vigorously, and in process of time will twine themselves round the stem of the *Pereskia;* thus affording nourishment to the graft from the atmospheric elements which they imbibe, and contributing to fix it still more firmly on the stock, and preserve it from accidents. This is a highly pleasing and interesting circumstance, and tends to prove, what we have before asserted, that plants of this description, though they are almost destitute of roots when planted in soil, will, if placed in moss, produce an abundance of strong and healthy roots, and consequently grow much more luxuriantly, and attain to a larger size. Indeed, plants grafted in the manner here proposed, will not only grow more luxuriantly, but will have a most curious and pleasing appearance; and to all lovers of novelty, as well as to all admirers of this beautiful tribe, we cordially recommend this system of treating these singular productions of nature; besides, there can be little doubt that it would answer equally well with many succulent species of *Euphorbia*, as well as with such plants as *Cereus senilis,* the *Melocactæ*, and others of similar habits.

If, however, the long and bare stems of the *Pereskia* are considered unsightly, such an objection may at once be obviated by cutting the stem of the stock down to any desired length, previous to performing the operation of grafting. Indeed, it would perhaps be better in this case always to reduce the stem of the *Pereskia* to within three or four inches of the soil; as a quantity of moss might thus be constantly kept about the roots of the graft without being at all conspicuous or unsightly; and, as this moss might easily be kept moist, if the pot in which the *Pereskia* is growing be well drained, the graft would thus have the benefit of a large supply of nutriment from its own roots, as well as that derived from the stock on which it is placed. But where this latter method is adopted, the novelty of the system would be kept a secret, as the mode of treatment would be concealed by the moss; therefore much depends upon the taste of the cultivator as to which of the above systems may be considered most worthy of adoption. However, where it is only desired to grow the plants stronger and finer, it is better to head the stocks down to within four inches of the soil; and where novelty is wished for, to leave the stocks from one to two feet in height; by either of these methods, the plants thus grafted may be cultivated to much greater perfection, than if they were planted in soil, and otherwise treated in the usual manner.

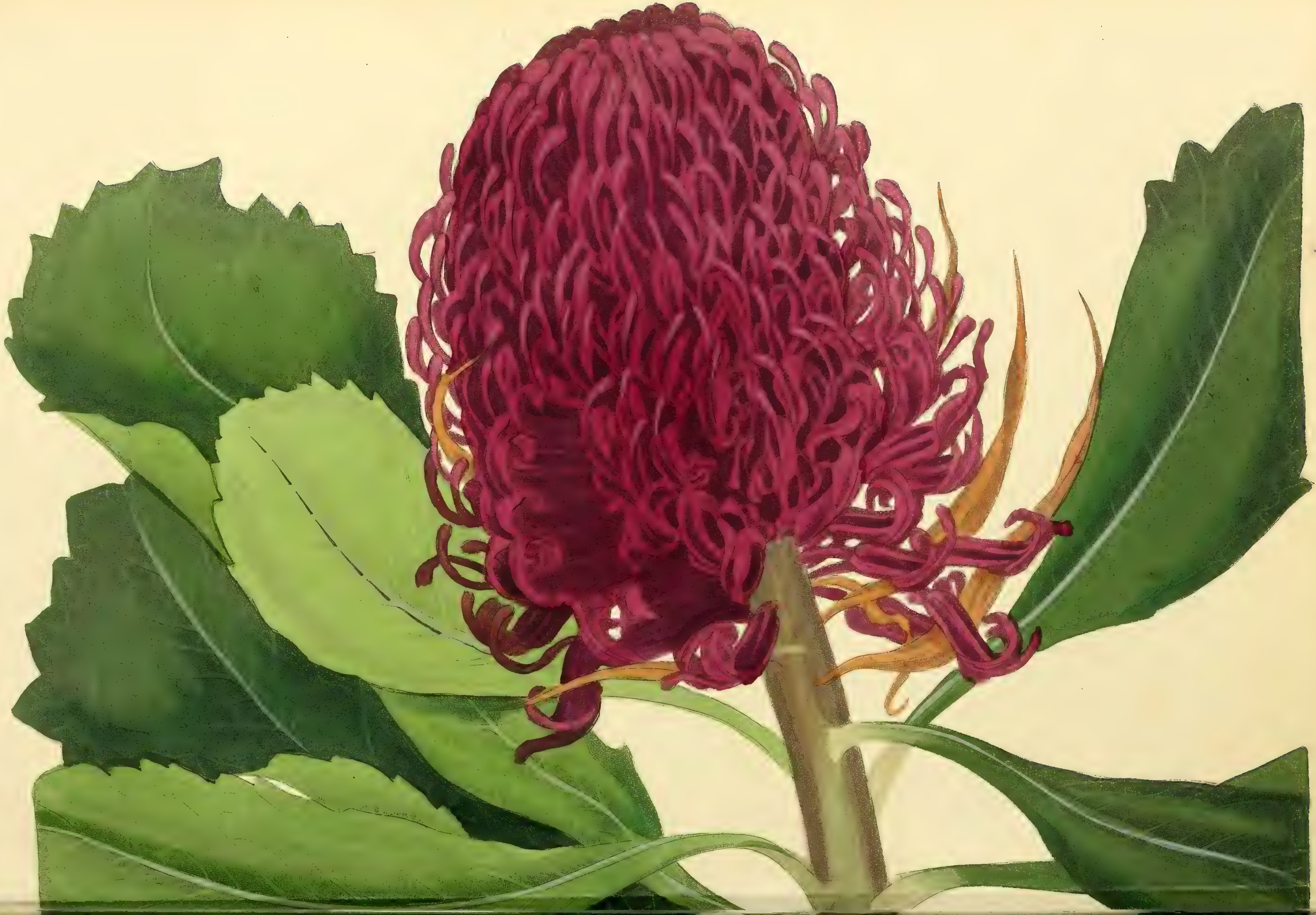
OPERATIONS FOR APRIL.

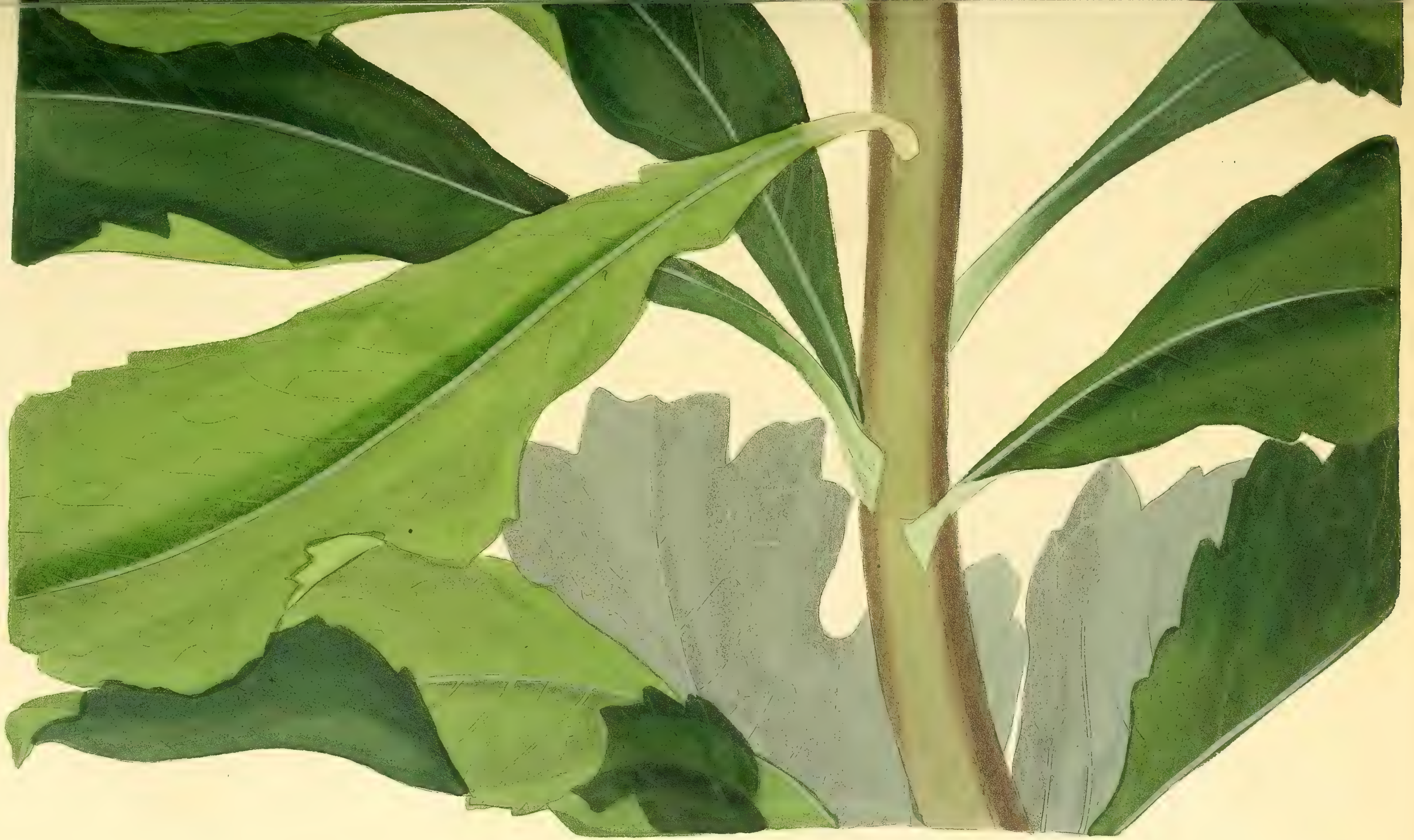
We refer to the Calendar of Operations for March in our last number, for work to be done in the present month; directions for potting, sowing of seeds, and otherwise attending to the various kinds of plants, will be there found; further than which we have very little to add in this place. In the stove, when the plants are cleaned, potted, neatly and securely tied up, the temperature of the house should be gradually changed, in order to excite the buds into action; the temperature should be kept from 65° to 75°, never below the former in the night, nor any below or much above the latter during the day; the less it varies from these points the better the plants will succeed. The atmosphere should by degrees be brought to a moderate state of humidity, and the plants almost hourly and actively watched, in order to keep down the various descriptions of insects, with which they are so liable to be injured at all seasons, but perhaps more particularly when vegetation begins to start in the spring, if not diligently watched and effective means had recourse to, in order to destroy them. The most efficient methods may be briefly explained in the following manner:—The Red Spider (*Acarus Tellarius*), which rarely fails to find access to the best-managed plants, is so averse to humidity and water, that if the plants infested by them are kept in a moist place, or repeatedly syringed with water, they will soon disappear, but will as soon return if the application of these means be neglected for any length of time; it is therefore necessary to examine the plants frequently and attentively. The ravages of thrips are less easily arrested than the red spider's; the best means which we have found to keep them down, is powerfully to syringe the plants infested, with water, or water containing a solution of soft soap, or to apply a powerful fumigation of tobacco. These means, judiciously persevered in, will invariably succeed. Of the scale there are several descriptions, but the white and brown are most prevalent in our stoves; these may be kept under by removing them from the part affected with a brush or the finger, and afterwards sponging the plants over with soap or pure water; if this is once carefully done, and the plant afterwards vigorously and repeatedly syringed, they will not do much harm. The mealy bug may be easily kept under by forcibly syringing whenever it appears, using soft soap water with a few drops of the spirits of camphor in it. The green fly, as is well known, may be effectually destroyed by fumigating with tobacco.

The plants at this season must be well watered, and cuttings made, and propagated in sand under a glass, of any kind that it is desirable to multiply.

In the greenhouse an increase of air should be admitted, and the plants carefully though sufficiently watered, those of the genus *Erica* in particular. *Rhododendrons* and *Azaleas*, if well watered, will retain their flowers much longer than they would if stinted in this respect. *Camellias* continue to syringe, and to promote their growth place them in a little humid heat. *Geraniums* it will be well now to propagate for late summer and autumn flowering. Propagate when it is desirable to do so, and guard against damp from over-watering, &c. Sow seeds, and attend to the potting off of young plants; use light open soil, and avoid exposing them to the sun. Offsets of *Campanula pyramidalis* should be planted in rich loam and peat, and placed under a glass in a little heat; when they have made roots, plant them in a shady situation in the flower border, where they will attain a large size, when they should be potted into large pots for flowering.

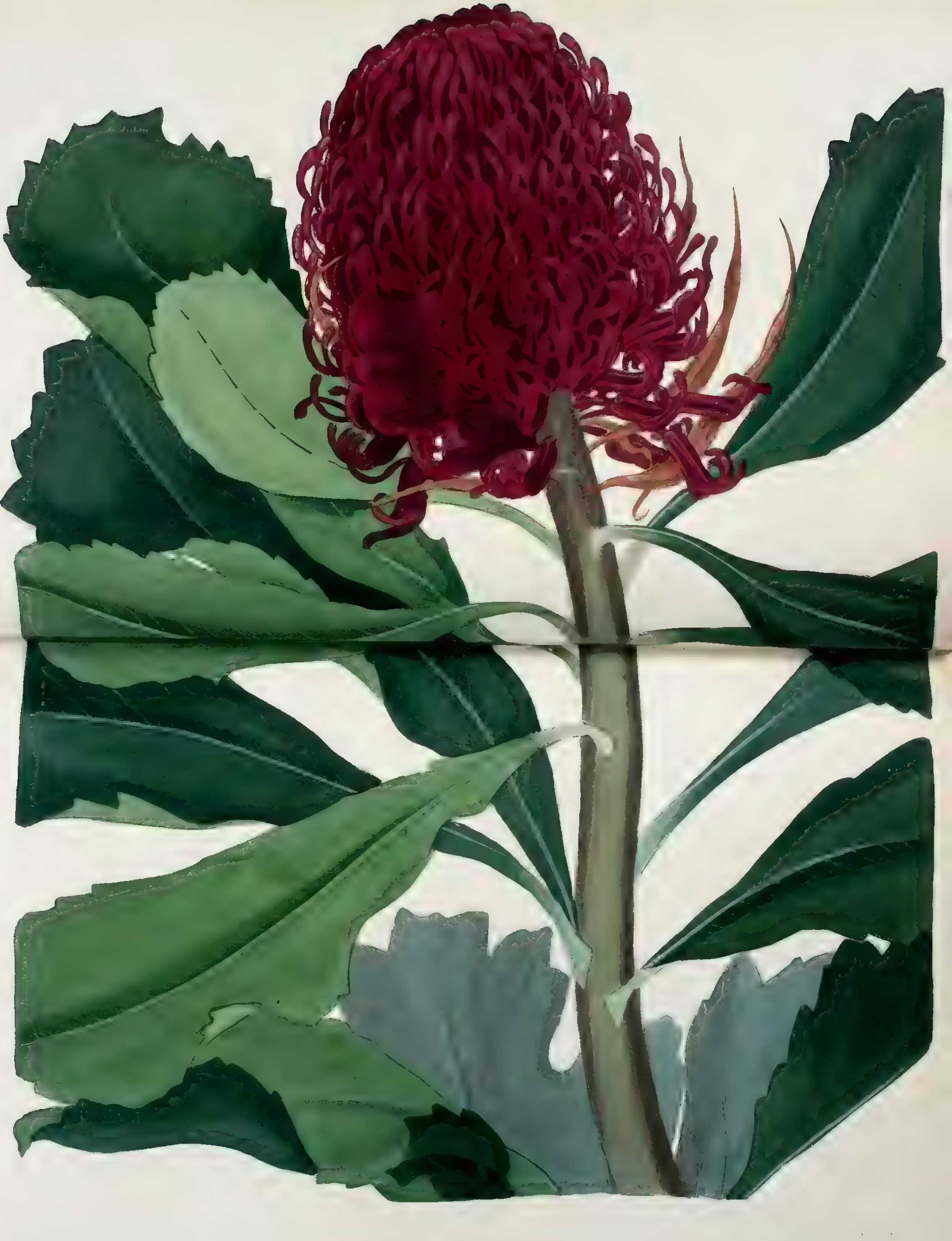
In the flower garden sow seeds of tender and half-hardy plants, divide the roots of *Hepaticas* and *Violets*, and take offsets from *Auriculas* and *Polyanthuses*. *Tulips* will now be coming forward, and should therefore be protected from cutting winds, heavy rains, and hot sun, by placing an awning of canvass over the bed. To promote the growth of newly-propagated Dahlias give them an increase of pot-room and heat, observing to admit a little air when the weather will admit of so doing, or the plants will draw too much. We would particularly urge the propagation of Roses, especially the China Rose, as so many have been lost during the late severe frost. Cuttings will strike prepared in the common way, and placed in a shaded border, under a hand-glass, or, if available, under a frame or hand-glass where there is a moderate heat. Pot, sow, and propagate on all hands such plants as it is desirable to have good specimens or to possess a large stock of. Propagate *Ribes sanguinea*, *Honeysuckles*, &c., they succeed well if merely stuck in a shaded border, in the manner practised for multiplying *gooseberries* and *currants*; the *common Laurel*, *Portugal Laurel*, Laurustine, &c., should be abundantly propagated by every practicable means.





MAY 1 1858

Telopea speciosissima.



Telopea speciosissima

TELOPEA SPECIOSISSIMA.

(THE WARRATAH.)

CLASS.
TETRANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
PROTEACEÆ.

GENERIC CHARACTER.—*Calyx* irregular; on one side irregularly divided, on the other four-toothed. *Stamens* immersed in the concave ends of the calyx. *Gland* none. *Ovary* stalked, many-seeded. *Stigma* oblique, orbicular.—*Loudon's Encyclopædia of Plants.*

SPECIFIC CHARACTER.—*Leaves* obovate, obtuse, unequally serrated. *Spike* (corymb) subcapitate. *Involucre* many-leaved.
SYNONYM, *Embothrium speciosissimum.*—*Bot. Mag.* 1128.

THE great scarcity in the collections of this country of so magnificent a plant as the one here figured, is doubtless solely attributable to the injudicious treatment to which it is subjected by many cultivators, and the want of sufficient attention to its constitution and habits; and, that our collections may no longer be deprived of so attractive an ornament, we shall here briefly state those particulars relative to its cultivation which experience has shown must be promptly and judiciously attended to, otherwise nothing but failure and disappointment will be experienced. One of the most obvious causes of the frequent failures which attend the cultivation of this plant, is the injurious system, so very generally practised, of watering greenhouse plants indiscriminately and periodically, whether they require it or not. We ourselves have witnessed plants of this species in the collections of different individuals, which have, during the winter season, suddenly perished, leaving the persons who possessed them in utter ignorance as to the cause of so lamentable an occurrence, and inducing them to renounce all further attempts at cultivating it; but we have not the slightest doubt, that if the plants thus lost had been carefully and attentively examined, the cause of their death might have been traced to their having been supplied with an undue quantity of moisture, in pots which had not been properly or sufficiently drained. But, independently of good drainage and a careful discrimination as to the quantity of water administered, a due degree of exposure to light and air is indispensable to the superior cultivation, indeed to the existence, of this plant, especially during the winter season; for, in an ill-ventilated house, where the Warratah is placed at a great distance from the glass, and surrounded too closely with other and larger plants, it will seldom survive the winter.

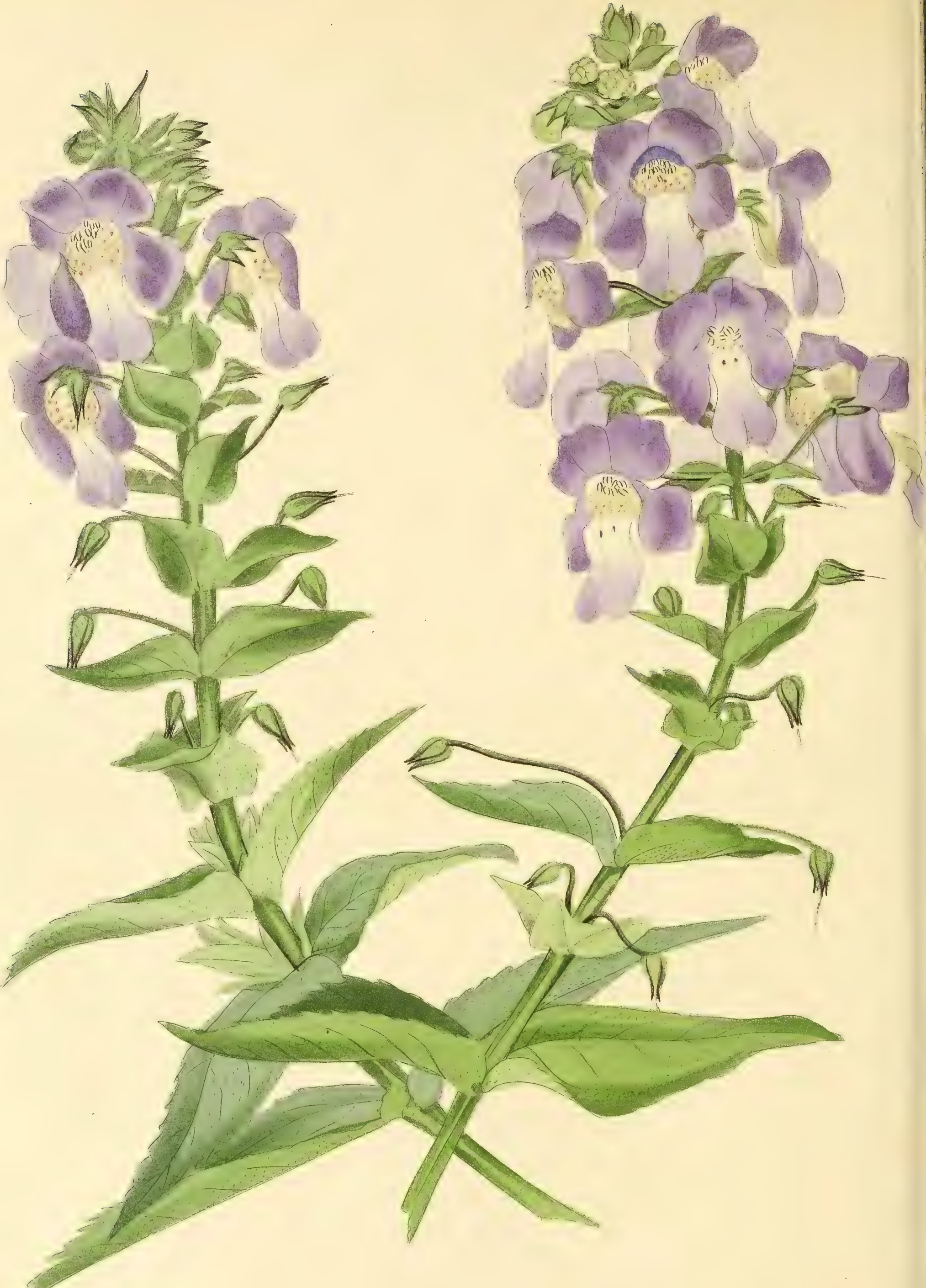
Judicious potting, however, is of first importance; for unless this operation is performed with great care, and with a due regard to the nature of the plant, no success can be expected to be attained. An effective drainage, a light and friable (by no means adhesive) soil, composed of equal parts of sandy loam and heath-mould, with a good proportion of white sand and gritstone well incorporated, are the chief points to be attended to in potting this plant; and though it requires so little water in the winter season, it must have a liberal supply in the summer months, particularly while in a growing or flowering state.

Although it may be propagated by cuttings, which will generally succeed tolerably well if planted in pure sand, young plants may be obtained much more speedily, and with much greater certainty, by layers; more especially as the plants naturally produce an abundance of suckers, which may be easily laid down into small pots introduced round the one in which the plant is growing, and will soon form roots.

At Chatsworth we kept a specimen of this plant for some time in a house, the temperature of which was maintained rather higher than that of the greenhouse; but in this situation it was much infested with insects, and we have found that an airy situation in the greenhouse is far preferable for it in the summer months, though we are inclined to think that the one above alluded to is more suitable during the winter season, as a greater degree of heat would doubtless have a tendency to counteract the injurious effect of a redundance of moisture.

This plant is a native of New South Wales, and Sir W. J. Hooker states (in the Bot. Mag. 1128) that it is allowed by the natives and settlers of that colony (which is well known to be so rich in floral beauties) to be the most splendid of all their vegetable productions; the natives also are said to obtain an agreeable repast by sucking its tubular flowers, which abound with honey. It produces its brilliant flowers in this country in the months of June and July.

The generic name is derived from *Telopas*, signifying, seen at a distance; this doubtless alludes to the great distance from which its rich crimson-coloured blossoms are discernible in its native country.



MAY 1.1838

Angelonia salicariæfolia.

ANGELONIA SALICARIÆFOLIA.

(WILLOW-LEAVED ANGELONIA.)

CLASS.
DIDYNAMIA.

ORDER.
ANGIOSPERMIA.

NATURAL ORDER.
SCROPHULARIACEÆ.

Generic Character.—*Calyx* four-parted, nearly equal. *Corolla* irregular, spreading, two-lipped, with a short tube, and arched orifice; upper lip two-parted, lower much larger, three-parted, with the middle segment slipper-shaped at the base.—*Loudon's Encyclopædia of Plants.*

Specific Character.—*Plant* an evergreen, herbaceous, perennial, from 15 to 30 inches high; dividing into branches immediately above the crown of the root. *Branches* four-cornered, generally upright, sometimes recumbent for the lower half, or thereabout; leafy only at their upper extremity, closely and shortly furred. *Leaves* opposite, spreading, near, sessile, 1½ to 2 inches long, 6 to 8 lines broad, shortly furred on both sides, slightly indented at the edges. *Flowers* violet-coloured, axillary, solitary; peduncles long. *Calyx* deeply five-cleft, two segments closer than the rest. *Corolla* subbilabiate, bipartite; lower lip much longer, tripartite, the middle segment larger, and enlarged at the base in the form of a slipper, rounded at the end. *Stamens* four, attached to the tube of the corolla; filaments unequal, shorter than the corolla, slightly bowed, and furred their whole length. *Anthers* two-celled, yellow; cells divergent, pointed. *Germen* spherical, pubescent. *Style* very short. *Stigmas* pointed. *Capsule* spherical, depressed, girded at the base by the calyx, which becomes slightly fleshy; marked from bottom to top on the outside by 4 furrows, opening at the upper part into 2 cells; both valves splitting at the top into 2 parts. *Seeds* numerous, small, wedge-shaped, attached to a fleshy receptacle, with a pitted membranous coating.—*Bot. Reg.* 415.

Perhaps a more ornamental, and consequently a more truly valuable plant has not been introduced to our collections for some time than the one here figured; but because it has been known in this country for twenty years, it is now almost banished from our stoves, and is rarely seen or met with except in the collections of such individuals who do not participate in the general mania for new plants, but value them only as they are more or less intrinsically interesting, either in general appearance, or the individual or united beauty of their flowers.

In cultivating this plant, two important particulars relative to its natural habits should be kept in view; first, that it is found growing on dry rocks, and consequently will not thrive in a soil that is too retentive of moisture, or which is not properly drained; and next, that it grows naturally in a very elevated and exposed situation, from which we learn, that it requires a great degree of light and a free circulation of air. The soil therefore which is most suitable, is a mixture of light sandy loam and heath-mould, and the cultivator must not forget to add a few pieces of gritstone, and place a sufficient quantity of potsherds or other similar materials in the bottom of the pot. After these points are properly attended to, it is no less important that this plant should be placed in a light and airy part of the stove; and, not being of woody habits, it will require to be freely supplied with water in the summer months, but should be kept in a perfectly dormant state through the winter, by administering water very cautiously and sparingly.

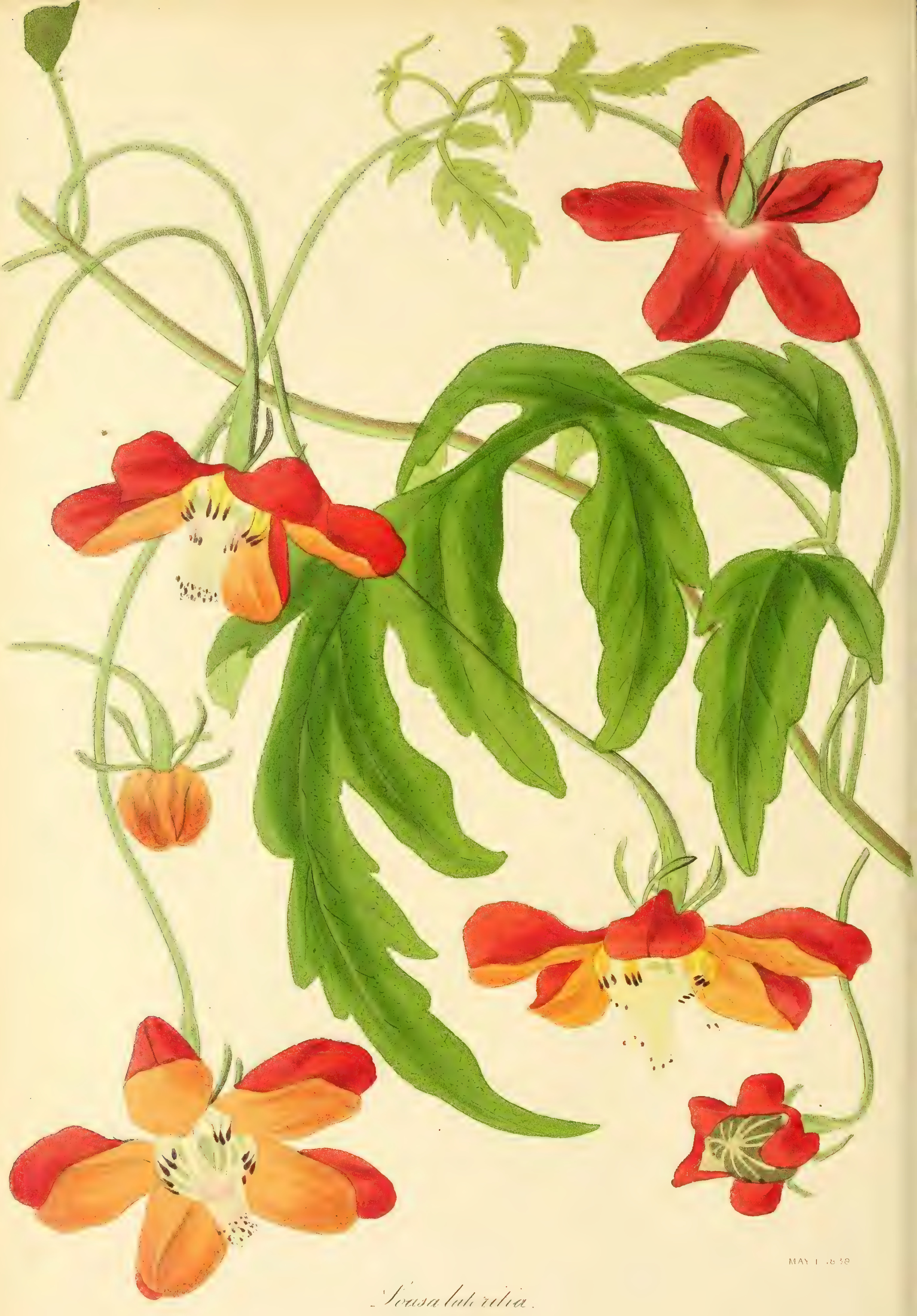
It has usually been treated as a stove plant, and certainly will produce its flowers more profusely, and in much greater perfection, in such a situation; but with those persons who do not possess a stove, it will make a very handsome ornament in the greenhouse, as the plant from which our drawing was taken, and which flowered at Chatsworth in the month of August 1837, had been kept in the greenhouse for a great length of time, and thrived well under the usual treatment given to herbaceous greenhouse plants.

Propagation may be effected by cuttings of the young shoots, but as they are of a succulent and watery nature, great care is necessary to preserve them from perishing through excessive moisture; and they should always be planted in pure sand.

This plant was introduced to this country from Caraccas, where it was first observed by those eminent naturalists, Messrs. Humboldt and Bonpland, about five hundred toises above the level of the sea, and it flowered for the first time in this country in the stove of Mr. Herbert of Spofforth, in 1819. It is used medicinally as an emetic by the inhabitants of the district in which it is found.

It is worthy of remark that plants with blue flowers are comparatively rare in our collections of stove and greenhouse plants, and this imparts to the subject of the present drawing additional value, and should induce cultivators to devote increasing attention to its cultivation.

In its native country this plant is usually designated *Angelon*, and from this circumstance it has received its generic name.



MAY 1 1838

Loasa lateritia.

LOASA LATERITIA.

(RED-FLOWERED LOASA.)

CLASS. | ORDER.
POLYADELPHIA. | POLYANDRIA.

NATURAL ORDER.
LOASEÆ.

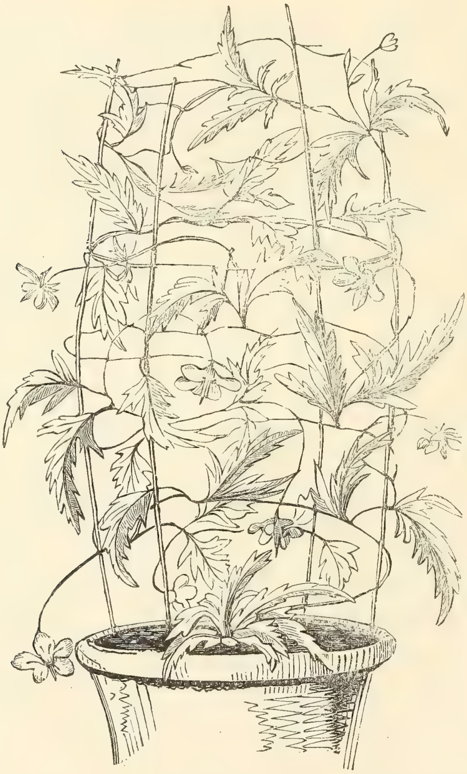
GENERIC CHARACTER.—*Calyx* five-leaved. *Petals* five. *Nectary* five-leaved. *Capsules* half inferior, one-celled, half three-valved, many-seeded.—*Loudon's Encyclopædia of Plants.*

SPECIFIC CHARACTER.—*Plant* suffruticose, hispid in all its parts. *Stem* climbing, slightly branched, *Leaves* alternate lobate, lobes jagged, acute, slightly curved at the points; lower ones on footstalks, upper destitute of them. *Peduncles* axillary, one-flowered, six inches in length. *Flowers* of a bright brick-red colour, approaching to scarlet; abundant. *Petals* ten; the five outer ones large, keeled, slightly cucullate; the inner five, small, yellow, cucullate, containing a saccharine secretion. *Stamens* numerous, disposed in five bundles, fronting each of the outer petals. *Ovarium* inferior, one-celled, many-seeded, densely set with hairs.

IN an age when our collections are constantly receiving accessions of hardy and half-hardy climbing plants, it becomes necessary to examine more attentively each new production, that our gardens may not be crowded with such plants as possess no other merit than that of novelty, and are, in other respects, almost worthless.

This precaution however is by no means necessary with regard to the plant of which a drawing is here given; for, a more interesting and valuable plant for ornamenting the trellises of the flower-garden or greenhouse, we have not had the gratification of figuring for some time. We are accustomed to regard such plants as good, and worthy of notice and cultivation, which are of elegant habits,—produce handsome and showy flowers,—are disposed to blow freely,—and exhibit their blossoms to advantage;—all these properties reside in the plant we are now noticing to no mean extent; and when we add that it may be propagated with great facility, and cultivated with extreme ease, we should think that no other recommendation is necessary to bring it speedily into extensive notice, and obtain for it almost universal esteem.

The plant from which our drawing was taken was kept in the greenhouse and stove, and trained round a circular trellis in a spiral direction, in which state it produced one of its elegant blossoms from the axil of each leaf; but we are informed that in the Glasgow Botanic Garden, it was turned out into the open border, and trained against an open wall, where it grew in a most luxuriant manner, and produced its flowers in great profusion. From this we become acquainted with the interesting fact, that this plant is almost hardy, or at least that it will thrive well according to the usual treatment given to half-hardy climbing plants. Still it will be highly advantageous to keep a few plants of it in the greenhouse or stove, where they may either be placed in pots and trained to a flat or circular trellis, or turned out into the bed or border of the house, and trained to the rafters or roof. In either of these situations, if proper attention be paid to the time of sowing the seeds, it will produce its flowers in the autumnal months, and these will continue expanding till the commencement of the ensuing year; thus enlivening and ornamenting our plant houses at that season of the year when almost all other plants are in a dormant state.



When the flowering season terminates, the plant throws out new shoots from the axil of each leaf, and there can be no doubt, that in a succeeding season the display of flowers will be much greater; it will probably prove a biennial, or perhaps a perennial plant, in which latter case it would doubtless assume a shrubby habit, but we are not prepared to state which of these will be the case. For a representation of the habits of this plant, see woodcut figure.

Propagation may be carried on extensively either by cuttings or seeds, the latter of which are produced in great abundance, ripen freely, and readily germinate. It delights in a rich loamy soil.

Sir W. J. Hooker (*Bot. Mag.* 3632) states that it was raised in the Glasgow Botanic Garden from seeds sent there by Mr. Tweedie, which he collected in Tucuman.

The nursery of Mr. Young, Epsom, produced the subject of the present drawing, where it flowered in great perfection in the greenhouse and stove, from the month of November 1837 to February 1838; and our figure was taken in December last.

The species of this genus are remarkable for the stinging properties that are resident in the hairs with which they are so abundantly furnished; but the present plant, though not altogether destitute of this malignity, possesses it in a very slight degree.

The meaning of the generic name is unknown.

The specific name was most appropriately given by Sir W. J. Hooker, in allusion to the colour of the flowers. This is the species we have before had occasion to notice under the name of *L. aurantiaca*, which latter appellation is the one by which it is generally known; but the name under which it now appears is much more appropriate, as will at once be admitted by all persons possessing any acquaintance with it.

FIRES WITHOUT SMOKE:

EQUABILITY OF TEMPERATURE.

In our notice on the subject of fires at pages 13, 14, of the present volume, we gave the public some reason to expect a further communication upon a method by which we imagine the heating of every description of glazed horticultural erections may be economically effected upon scientific principles.

The *smoke nuisance* has justly been complained of, but we conceive it is to the *waste* produced that the *gardener* should trace the subject of his complaint. In great cities, and in all confined localities, a vast volume of dusty charcoal propelled from chimneys into the atmosphere, must of necessity occasion much filth as well as inconvenience; and it is certain that a mass of smoke, constantly renewed as it is in London, Birmingham, and elsewhere, is productive of much distress to asthmatic persons and others affected with pulmonary complaints; but in the country, smoke is quickly dispersed, and in some degree tends to promote vegetable nutrition. Therefore we do not complain of injury from smoke, and are inclined to believe that if small portions escape through a crevice in the flue, plants in general will be thereby rather benefited than otherwise, a fact which is somewhat corroborated by the healthy condition of many plants in the windows of very close apartments imbued with tobacco and coal smoke.

What we aim at as gardeners, is the effectuation upon scientific, and therefore *economical* principles, of some plans by which the houses may severally or collectively be heated to any required degree of high or low temperature, without the loss of one particle of those inflammable substances which now pass through the flues and chimneys. Can this great, this desirable consummation be attained?

The hints we now offer are crude, because they have not been acted upon; they are thrown out at a venture, as a *stimulus*, in this age of infantile, but steadily progressing, science; and we entertain little doubt that, in a very short period, we shall hear of the efforts of some spirited individual which will prove the premices of a general system of improvement.

When coal gas was first introduced by Mr. Windsor, it became the object of universal fear, and of much vituperation: it has triumphed, and its enemies have passed away. To it, or to some agent possessing corresponding or greater energies, we look for the accomplishment of the purpose we entertain, and to which we shall now shortly allude.

Every one who has visited towns lighted by gas, must have noticed in one situation or other, within the past twelve months, a very ornamental stove of a cylindrical form, which, without any appearance of fire, diffuses a general warmth, that may be increased to an almost insupportable degree of heat, by the simple turning of a screw. This furnace is a species of argand-burner, supplied by many jets of flame, that may be depressed till they appear like so many small blue-balls, or raised till they become a circle of intense fire. From some experiments recently undertaken, we have proved that an extremely small portion of ignited charcoal (say three ounces) will heat an apartment or a greenhouse, twenty-four feet long, so as entirely to counteract the influence of frost. One of these new gas stoves, without any of the trouble attendant upon charcoal, would supply ten times the volume of radiated heat; but as the charges of the gas factors are very heavy, it may be doubted whether it would be economical to introduce gas into small forcing houses at the present charges. We therefore have another object in view, and now beg to direct the attention of noblemen, gentlemen, and the proprietors of extensive forcing departments in general, to a mode of independent operation which we saw adopted in a very extensive factory at the earliest period of gas-lighting.

The noble works of Chatsworth, for instance, might be made to furnish a striking and most brilliant example; why may we not indulge the expectation? it would enhance their glory.

A gas furnace and apparatus complete would be constructed at a very moderate outlay, and in the vicinity of the collieries would be supplied with fuel on the most economical terms. The cubical dimensions of every house being calculated, and the maximum degree of heat ever required ascertained, gas stoves might be introduced of appropriate size, and these would be easily rendered in the highest degree ornamental. Thus every one would be rendered independent of the works; and—to say nothing of oil gas, the galvanic power, and other masterly discoveries now only in embryo, but which assuredly will be revealed and made available—the ordinary coal gas would be rendered the efficient agent of heat in every branch of ornamental or forcing horticulture. This heat could be at command, ever ready, capable of reduction, of amelioration, or of the highest exaltation. The retort furnace of distillation would produce smoke from the *first* fire, but there it would end; all beyond it, all its product, all its branches, would be so many instruments of supply; every product of the coal, or lime used as a purifier, would be useful to the garden or its fences; the coke would be consumed as fuel, and the pure gas would be the source of heat without smoke. The chemical results of the combustion are watery vapour and carbonic acid, both useful to plants. In a word, we perceive nothing but unqualified good, as respects those large establishments wherein the expenses are now enormous. In smaller places, the consideration may not as yet be of moment, but the time is not far distant when the progress of science will lead to the development of some equally effectual method of improvement.

REMARKS

ON THE

PROPRIETY AND IMPORTANCE OF HAVING TWO OR MORE HOUSES IN WHICH TO CULTIVATE ORCHIDACEOUS PLANTS, DIVIDING AND ARRANGING THEM ACCORDING TO THEIR HABITS.

After the long articles which have appeared at various times in this Magazine on the cultivation and management of Orchidaceous Epiphytes, any further observations on this subject may seem superfluous; but, taking into consideration the high estimation in which this peculiarly interesting tribe is now held in the horticultural world, and conceiving that any additional particulars relative to its cultivation will always be acceptable to our readers, we propose in the present instance offering a few practical observations on the expediency of dividing a collection of these plants into two or more parts, according to the peculiarities of their habits, and placing each section separately and distinctly from the other in a different house.

The genera and species of plants constituting the Natural Order Orchidaceæ, are of the most diverse habits; some requiring an extremely high temperature and excessive moisture, others thriving best in a comparatively low temperature, and a perfectly dry or very slightly humid atmosphere. Yet how frequently do we find the inexperienced gardener, and even cultivators of the first class and acknowledged ability, with the whole of their collection of orchidaceous plants assembled together in one house, kept in the same degree of temperature, and treated in nearly, or (in many instances) precisely the same manner! That this system of management is prejudicial to many species, the most inattentive observer cannot fail to have noticed; and the reason usually assigned is, that some cultivators maintain their houses at too high a temperature, while others again adopt the opposite extreme; and it is generally believed that those individuals who pursue an intermediate course, and keep their houses at a moderate degree of temperature, with a very slight atmospheric moisture, are most successful in cultivating these plants, and bring them to the highest state of perfection. To a certain extent this opinion is well founded; but we imagine that few individuals, who have had any experience in the cultivation of this tribe of plants, are not now prepared to admit, that the notion above alluded to, and which has been very generally entertained and adopted, is far from being correct. It is true that by this system the two extremes of temperature which various species require, are modified to such a degree, as to admit of the bare existence of plants of either class; but, we ask, is the cultivator of orchidaceous or any other plants satisfied and contented with merely seeing his plants alive, without making any progress in size or stature, or, at least, with progressing very tardily? No one, we are sure, can for a moment acknowledge such indifference. And yet this is in fact the real effect of the system above alluded to. We allow that such a system does appear plausible and rational, and that it seems to be founded on correct and accurate principles; indeed we ourselves eagerly embraced and supported it, and, to a great extent, practised it; but we have since been convinced of its fallacy and impropriety, and have arrived at the conclusion, that, to grow these plants to any degree of perfection, they should at least be kept in two houses, and if convenient, three will be highly desirable. In these houses, the temperature should be maintained at different degrees, and the atmosphere adapted to the natural habits of the plants respectively intended to be grown in them. As an illustration of this hypothesis, we mention the elegant and interesting genus *Dendrobium*, most of the species of which require a high temperature and a great degree of moisture; and where these are not supplied, a consequent deficiency becomes manifest in size, and the beauty of their general appearance. We were afforded a striking proof of this a few months since in the splendid collections of Messrs. Loddiges and Rollison; in that of the former gentlemen, who are known to maintain a high degree of temperature, and as a necessary concomitant, great humidity, in their orchidaceous house, the species of *Dendrodium* flourish in the richest luxuriance, and constantly exhibit a living mass of verdure, which, together with the size and beauty of the specimens, is equalled by few, and, as far as we are aware, surpassed by none. On the contrary, in the collection of Messrs. Rollison, where a more moderate degree of temperature is kept, and a less quantity of atmospheric moisture supplied, though they undoubtedly excel the gentlemen before alluded to in the cultivation of some of the species of this tribe, we witnessed plants of *Dendrobium cucullatum*, and others, which indeed produced their flowers in tolerable profusion, but were wholly destitute of foliage, and consequently were deprived of much of their interest and beauty. This defect was evidently attributable to the want of a higher temperature and a greater degree of atmospheric humidity, and is of itself sufficient to prove, that the attempt to adapt the climate of one house to the constitution and habits of those plants which require a great degree of heat, and others which will thrive best in a lower temperature, is neither founded on correct principles, nor at all calculated to answer the purpose required. Again, it is obvious that the Messrs. Loddiges, though they succeed so well in the cultivation of *Dendrobiums*, can by no means compete with other gentlemen in the size of their specimens of the various species of *Cattleya*, nor in the healthy luxuriance in which they are grown; and still less do they cultivate the numerous species of *Oncidium*, in the perfection to which Messrs. Rollison and other gentlemen have brought this elegant genus. We beg, however, distinctly to be understood, not to imply anything like an allusion to the incompetency of either of these gentlemen to cultivate any of the genera comprised in this beautiful tribe; all that we wish to deduce from the above facts is, that *Dendrobiums* require a very high temperature, *Cattleyas* a much lower one, and that *Oncidiums* will thrive best in a house where a still less degree of heat is kept.

We have instanced the above three genera as being large and important ones, and as sufficient illustrations to enforce the system of management we are now advocating. We might here attempt to class the whole tribe of orchidaceous plants with one or the other of these genera into three divisions, but this would occupy too much space for the present article, and we shall content ourselves on this occasion with merely introducing the subject to the notice of our readers. If, however, three houses cannot be conveniently devoted to the cultivation of this tribe, such plants as the *Cattleyas* and *Oncidiums* will flourish tolerably well in the same house, but by no means should they be placed with plants of similar habits to the genus *Dendrobium.* But the evils attendant on the system of equalising the temperature of the orchidaceous house are not the only features in the general system of cultivation which prove injurious to these plants. The subjects of shading, and the various methods of administering water, which have been so frequently discussed and treated of in horticultural and botanical publications, and which are universally admitted to be essential to the superior cultivation of these plants, are too generally applied indiscriminately, and without any regard to the peculiar habits of the different species. In the first instance, it is commonly believed, that all orchidaceous plants are inhabitants of the dark and shady recesses of tropical forests; and even those individuals who are well acquainted with the facts recorded by collectors and travellers—that many species of this tribe are found growing in exposed situations, where they receive the immediate and direct influence of the sun's rays—do not appear to practise any variation in their treatment of those species which are declared to be found in such localities, but subject the whole of their collection to certain general rules of management, and cover equally the whole of their house, and consequently all their plants, with some slight shading, thus disregarding the reported observations of travellers, and neglecting to follow the precepts of nature. Now, with very little attention, and without any extra trouble, this system might be altered, and each plant might receive the peculiar treatment in this respect which collectors and nature herself inform us is most congenial to its habits. If such plants as require little or no shading were assembled together at one end of the house, and those for which a more than ordinary degree of it seemed necessary were placed next to them, how easy would it be to turn the canvass or other material back from that portion of the roof under which those plants which delight in the sun's influences were placed, over that part which required a greater degree of shading; or, to spread it singly over the former description of plants, and turn the other part back over those of the latter description! Still, though this process is important, and though the habits of these plants in this respect ought by no means to be overlooked, a proper attention to the application of water in the various ways in which it is usually administered, is of much greater importance than the variation of shading.

In a collection of orchidaceous plants which are all congregated together in one house, most cultivators keep the atmosphere of that house more or less charged with moisture, and of course every individual plant inhales, according to its capabilities, an equal proportion of that moisture. It is scarcely necessary to state that some plants imbibe that moisture in an undue and unnecessary degree, and that where such is the case, it invariably proves to the same extent injurious. This can only be obviated by dividing the collection into at least two parts; for it is notorious, that those plants of this tribe which require but little heat, also need little or no atmospheric moisture; and on the contrary, such plants as thrive best in a high temperature, require a great degree of moisture to counteract the influence of the heat, and maintain the vital principle in full vigour. Therefore, if plants from temperate climates are kept in a house by themselves, there will be no danger of any of them being injured by excessive moisture; and if those which are known to inhabit tropical regions are likewise placed in a house or a department of a house where others of opposite habits are not admitted, they may receive the requisite supply of humidity without suffering from the aridity of the atmosphere, maintained on account of the other sorts with which they are intermingled. By this system, likewise, the necessity of varying the degree of shading will be almost entirely precluded; for it is obvious that those plants which require but little heat and a very slight degree of atmospheric moisture, will likewise generally be capable of enduring the full extent of the sun's influences, or at least will need less shading than such as are constantly and largely supplied with atmospheric humidity, and thus the whole of the plants in each house may be equally shaded, or nearly so. Nor is atmospheric moisture—by which term we mean the evaporation arising from water thrown on the flues or floor of the house, or, what is much better, from hot water kept in a cistern or boiler—alone to be considered here. Most, indeed all, cultivators of orchidaceæ, are accustomed to syringe their plants with water occasionally, some practising it to a great extent, and others applying it cautiously and sparingly. We do not, however, here intend to discuss the quantity in which it should be administered; we only wish to deprecate the practice of applying it indiscriminately in this manner; for to some species it is highly injurious, and not unfrequently does the injudicious application of it cause many of these plants to damp off and die. In this particular, again, the advantage of possessing two houses for the cultivation of these plants must at once be obvious; for to some species the administration of water in this way is absolutely necessary, while, as we have above observed, the practice is highly detrimental, and even fatal to others. Indeed, where this division is effected, and the plants are arranged in two separate houses, according to their habits, it is necessary to use great discrimination with regard to the application of water by a syringe, as many plants require a much greater quantity of water administered to them in this way than others which may probably bear a great resemblance to them in habit. In short, it is incumbent on every individual who imports or receives plants of this tribe from foreign parts, to make strict inquiries whether they abound most in tropical or temperate regions; whether they are found growing in shaded or exposed situations; whether they thrive best in excessively humid localities, or receive naturally only a moderate supply of atmospheric moisture; and last, though not least, whether they receive that moisture in the way of evaporation from the soil, by distillation from rain, or from their united influence and agency. With such data, the gardener or amateur cannot fail to cultivate this much-admired tribe of plants to the highest state of perfection; and we are fully convinced that the absence of such information has been the chief cause why so little success was attained in their cultivation till within the last few years. These difficulties, however, have now been in a great measure surmounted by the intelligence of the present age; and the progress that has been made in the cultivation of these plants during the past ten years is truly astonishing. Still we are yet comparatively ignorant of their true nature and habits, and many particulars relative to their cultivation yet remain to be investigated; and as few possess more ample opportunities of so doing than ourselves, we shall always feel great pleasure in laying before our readers and the public the result of our observations, considering ourselves abundantly rewarded by the gratification of contributing in the smallest degree to correct any erroneous impression that may exist, or to effect any improvement in the cultivation and management of this extremely beautiful and interesting tribe of plants.

REVIEW.

A very useful work has lately appeared, by the Rev. Patrick Keith, Clerk, F.L.S., author of " A System of Physiological Botany," under the following title, " A Botanical Lexicon, or Expositor of the Terms, Facts, and Doctrines of the Vegetable Physiology, brought down to the present time." The Book contains 407 pages of letter-press, in which is embodied much interesting and profitable reading on the terms used in Vegetable Physiology; all useful to the gardener, and indispensable to the botanical student. At the conclusion are given some preliminary remarks on the subject of Zoology, which may also be advantageously consulted.

We make the following extracts of the two or three first pages, from which our readers may form some idea of the author's merits :—

" A, in the composition of botanical terms, is merely the alpha privative of the Greeks, and denotes negation, as aphyllous, without leaves; acotyledonous, without cotyledons.

" Abbreviated.—Of two organs in comparison, the shorter is said to be abbreviated; an abbreviated calyx—a calyx shorter than the corolla.

" Abortive.—Barren; as a flower that falls without producing fruit.

" Abrupt.—Winged leaves, that have no odd leaflet or tendril, are said to be abrupt, or abruptly winged.

" Absorption.—The process by which vegetables take up their aliment is termed absorption. But as plants are not furnished with any individual organ similar to the mouth of animals, how, after all, it may be said, is the absorption of their food effected? Is it by the general surface of the stem, leaf, or root, or by any peculiar portion of these organs? By whatever part or portion of the plant the food may enter, it must at any rate pass through the covering of the epidermis, which the earlier physiologists thought it could not do, but by means of pores more or less visible. Yet some of them described the epidermis as being of so close and compact a texture, that the eye, aided even by the best microscopes, was unable to discover in it the slightest vestige whether of pores or of apertures. But Hedwig and Decandolle detected what seemed to be superficial pores in the leaves at least of many plants, and so will any one else who will be at the trouble of repeating their observations with lenses of similar powers.

" The next difficulty was with regard to the epidermis of the flower, fruit, and root. No pores had been detected in the flower and fruit, though it was evident that they were refreshed and invigorated by the access of moisture, and of atmospheric air; and no pores had been detected in the root, though it was evident that the whole of the nourishment which the plant derives from the soil must of necessity pass through it. It was also evident that no aliment could be taken up by the plant, except in the state of a liquid, or of a gas, that is by absorption, or by inhalation, as the chyle is taken up into the animal lacteals, or the air into the cells of the lungs. The avidity with which plants absorb water was perceived and acknowledged even in the earliest times, and even by men who were not botanists. Anacreon, in one of his little trifles in honour of drinking, makes the very trees of the forest drink :—' The black earth drinks, and the trees drink it,' that is, the moisture which it contains.

" By merely immersing in water a plant of almost any species of moss that has been some time gathered, or long exposed to drought, so as to have had its leaves shrunk or shrivelled up, the moisture will immediately penetrate the plant, which will thereby resume its original verdure, an experiment establishing the fact of the entrance of moisture into the plant through the medium of the epidermis.

" It might be doubted whether any of the moisture thus imbibed had passed through the root. But if the bulb of a hyacinth is placed over the mouth of a glass vessel filled with water so that the extremities only of the radical fibres shall be immersed, the water is imperceptibly exhausted, and the plant grows. The moisture must consequently have passed through the root. Plants seem indeed to have a peculiar facility in taking up water by the root from the infinite number of little absorbent bibulous sponges (spongiolæ) in which the fine fibres of the root terminate. This is the grand apparatus that nature has destined to the office of the absorption of vegetable nutriment, and it is owing to the powerful absorbent property of the spongiolæ of which it consists, that the scientific gardener in the transplanting of his young trees, or the scientific and ornamental planter, in the transplanting of his trees of full growth, is so extremely careful to preserve even the minutest fibres and extremities of the roots. Sir Henry Stewart's *Planter's Guide* has taught him the great importance of these little organs.

" Hales instituted a variety of experiments to show the absorbing power of the roots, and the force with which it acts. But as they were made chiefly on the sections of roots laid bare and immersed in water, they do not exhibit any direct illustration of the natural action of the *spongiolæ,* collecting nourishment at ten thousand different points from the moisture of the soil, and in this respect the experiments are defective. The next topic of inquiry was the absorbing power of the leaves, which Duhamel and Marriotte did much to elucidate. But the most satisfactory set of experiments upon the subject of leaves is that of M. Bonnet of Geneva, whose main object was to ascertain whether the absorbing power of a leaf was alike on both surfaces. With this view, he placed a number of leaves over water, so as that they floated on it, but were not immersed; some with the upper surface, and others with the under surface applied to the water. If the leaf retained its verdure the longest with the upper surface on the water, the absorbing power of the upper surface was to be regarded as the greatest; but if it retained its verdure the longest with the under surface on the water, then the absorbing power of the under surface was to be regarded as the greatest. Some leaves were found to retain their verdure the longest when moistened by the upper surface, and some when moistened by the under surface; and some were altogether indifferent to the mode in which they were applied to the water. But the inference deducible from the whole, and deduced accordingly by Bonnet, was, that the leaves of herbs absorb moisture chiefly by the upper surface, and the leaves of trees chiefly by the under surface. What is the cause of this singular disparity between the absorbing surfaces of the leaf of the herb, and of the tree? The physical cause might be the existence of a greater or of a smaller number of pores found in the leaves of the herb and tree respectively. The chemical cause would be the peculiar degree of affinity existing between the absorbing organs and the fluid absorbed. Duhamel seems to have been content to look to the physical cause merely, regarding the lower surface of the leaf of the tree as being endowed with the greater capacity of absorbing moisture, chiefly for the purpose of catching the ascending exhalations which must necessarily come in contact with it as they rise, but which might possibly have escaped it if absorbable only by the upper surface, owing to the increased rapidity of their ascent at an increased elevation; and regarding the upper surface of the leaf of the herb as being endowed with the greater absorbing power, owing to its low stature, and to the slow ascent of exhalations near the earth. This did not throw much light upon the subject, and the experiments were still deemed insufficient, as not representing to us the actual phenomena of vegetation, though the fact of the absorption of moisture by the surface of the leaf is fully confirmed by such phenomena.

"If, after a long drought, a fog happens to succeed before rain falls, so as to moisten the surface of the leaves, plants begin to revive, and resume their verdure long before any moisture can have penetrated to the roots. Hence it follows incontestably, either that moisture has been absorbed by the leaf, or that transpiration had been suddenly stopped by the closing up of the pores, now STOMATA, of the leaf, or both. The efficacy of rains themselves, and of artificial waterings, may be accounted for partly on the same principle, for they have not always penetrated to the root when they are found to have given freshness to the plant. The moisture then, that enters the plant as an aliment, is taken up by means of the pores or stomata, or in default of visible pores or stomata, merely by means of the absorbent power of the epidermis, not only of the root and leaf, but often, as it is to be believed, by the other parts of the plant also, at least when they are soft and succulent.

"By what means do the gases enter the plant? If water or other non-elastic fluids are capable of penetrating the outer bark of plants, whether furnished with visible pores or not, gases may well be supposed to be endowed with a similar capability. It might be asked, however, whether the water and the gases enter by the same pores where pores are found to exist. But though there appears to be nothing absurd in the assertion of the affirmative, yet it seems probable that each has its own peculiar powers or stomata. At least, it is known that some surfaces which repel moisture exhibit no evidence leading us to suppose that they repel the common air. This is well exemplified in the case of cabbage-leaves, in the time of rains and dews, when the drops roll along the upper surface of the leaf without wetting it, or lodge in its folds, like globules of quicksilver. So also in the case of fruits covered with bloom. It is probable, therefore, that all such leaves and vegetable surfaces as repel moisture are fitted rather for the inhalation of air, which they have long been regarded as capable of effecting; and in times in which it was fashionable to look for analogies between the plant and animal, in everything whatever, leaves were even regarded as being the lungs of plants. Grew thought he had discovered in the leaves a number of little bags or bladders filled with air. The air was supposed to have entered by inhalation, and the bags or bladders were supposed to be analogous in their functions to the cells of the lungs of animals. M. Papin introduced into the receiver of an air-pump an entire plant, root, stem, and leaf; but the consequence was that it very soon died. He then introduced a plant by the root and stem only, the leaves being still exposed to the influence of the air. The plant lived a considerable length of time, and hence he concluded that leaves are lungs. But these facts are far from being sufficient to settle the point in question, and we introduce them, not so much with a view to show their inadequacy, as to show that the doctrine, even if founded in truth, could not have been satisfactorily demonstrated by any experiments that were practicable at that time.

"It is to the modern improvements in pneumatic chemistry (and to them alone) that we are indebted for our knowledge of the real functions of the leaves of plants, and of their analogical resemblance to the lungs of animals, it being now proved indisputably that the leaves of plants not only contain air, but do both inhale and respire it. It was the opinion of Priestley that they inhale it chiefly by their upper surface ; and it has been shown by Saussure that their inhaling power depends entirely upon the integrity of their organisation. A bough of *Cactus opuntia* detached from the plant and placed in an atmosphere of common air, inhaled in the course of a night four cubic inches of oxygen ; but when placed in a similar atmosphere, after being cut to pieces and pounded in a mortar, no inhalation took place.

"Yet it may be said that the doctrine of vegetable respiration is still involved in something of mystery, as the existence of pores is doubted by botanists of high reputation, even in what is called *stomata ;* and as the occurrence of *stomata* is but a very rare phenomenon in the epidermis of roots, flowers, or fleshy fruits, or bulbs, which, after all, will not thrive or ripen well, if wholly deprived of air. But the recent experiments of M. Dutrochet have shown that the intervention of visible pores is not at all necessary, whether to the imbibition of moisture, or to the inhalation of gases, or whether in the case of animal or vegetable membrane. The liquid, or the gas, seems thus to enter by the means of the agency of organic molecular infiltration, a power prodigious in its capabilities, but not easily accounted for. Dutrochet attributes it to what he calls *endosmose*, that is, a rush inwards of a less dense to a more dense fluid excited by electricity. His experiments and hypothesis will be specified and examined under the article of the ASCENT OF THE SAP, or its CAUSE. In the mean time we will content ourselves by merely saying that we do by no means regard his conclusions as following legitimately from his premises ; nor can we regard any cause accounting for the effect in question as being at all adequate to its object, which does not involve the agency of a power of a higher order than that either of capillary attraction or of electricity ; namely, that of the agency of the living energies of the plant."

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NEW AND RARE PLANTS,

FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR APRIL.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ).

THE BEAN TRIBE (*Leguminosæ*).

MUCUNA PRURIENS. West Indian Cow-itch Plant. The principal part of the stinging substance which is sold in shops under the name of "cow-itch," is probably obtained from this plant, which grows naturally and abundantly in many parts of the West Indies, on waste land, neglected corn-fields, by the sides of rivers, and upon fences, to which latter its long twining stems rapidly and firmly attach themselves. It is a stove climbing plant, and produces an abundance of its handsome purple blossoms in long racemes in the month of September in the stoves of this country. Jacquin states that in the West Indies the hairs of this species pierce even the thick hide of the negroes; it would appear, however, that other species are still more malignant; for in India there is a kind called Enoola doola-unda, or Elephant's scratch-wort, the stings of which cause a considerable degree of pain and itching. *Bot. Reg.* 18.

THE TRUMPET-FLOWER TRIBE (*Bignoniaceæ*).

Amphicome arguta. Finely-cut Amphicome. This is a rare and very elegant perennial, with pink-coloured flowers; it has a weak stem, and grows about a foot high, and is probably sufficiently hardy to stand out through the whole season in the open ground, if it be planted in a dry situation or on rock-work, and protected during the winter months from the wet and the most severe frosts by a hand-glass or other shelter. Any superabundance of moisture is extremely injurious to it, and this must be guarded against at all seasons; it thrives best in a light loamy soil, with a small portion of sandy peat added, and may be increased by seeds or cuttings. *Bot. Reg.* 19.

THE PASSION-FLOWER TRIBE (*Passifloraceæ*).

Passiflora onychina. Lieutenant Sullivan's Passion-flower. This is an extremely handsome new Passion-flower, with beautiful blue-coloured blossoms, which were produced in the stove of Miss Trail of Bromley, Kent. It is described as being of very luxuriant habits, and seems to thrive best when planted in a border of rich loam. Its season of flowering is in the months of October and November, and it may most probably be increased by cuttings. *Bot. Reg.* 21.

THE CACTUS TRIBE (*Cactaceæ*).

Mammillaria tenuis. Taper Mammillaria. This is a plant of great beauty, and very curious structure, growing from two to four inches high, and an inch or more in diameter; the whole plant is covered with mammillæ of a hemispherical form; these are green, about a quarter of an inch in diameter, and each is tipped with a tuft of white down, from which diverges a cluster of about twenty slender, recurvo-patent aculei, nearly as long as the mammillæ, which are at first reddish, and afterwards of a yellowish or pale tawny colour; from just below the summit of the plant, and from all sides indifferently, the flowers are produced, which are small, solitary, and campanulate; they are of a pale yellow or straw colour, and slightly tinged with red externally. *Bot. Mag.* 3646.

Mammillaria floribunda. Copious-flowering Mammillaria. A truly beautiful species of this interesting genus, imported from Chili by Mr. Hitchin. Sir W. J. Hooker is not aware of its having been previously described in any other work, and considers that it approximates to our *M. atrata* in some of its characters, though it differs materially in being of stronger habits, in its larger, less-closely-placed, and more projecting mammillæ, in its stronger and more numerous aculei, its larger flowers, and the great inequality in the size and shape of the petals of the flowers, which are moreover of a paler red colour, and yellowish towards the base. *Bot. Mag.* 3647.

CLASS II.—PLANTS WITH ONE COTYLEDON (MONOCOTYLEDONEÆ).

THE ORCHIS TRIBE (*Orchidaceæ*).

STENIA PALLIDA. Pale Stenia. This is a rather pretty little epiphyte, imported from Demerara, by G. Barker, Esq., of Birmingham, in whose very extensive collection of orchidaceous plants it flowered last August. It is of dwarf habits, and produces its pale yellow flowers at the base of the leaves. It will thrive well with the treatment usually given to Maxillarias. *Bot. Reg.* 20.

We had the pleasure of witnessing this interesting orchidaceous plant in a flowering state in the rich collection of the above gentleman some months ago, and we then pronounced it to be quite new, and distinct from any we had previously seen.

CYMBIDIUM TRISTE. Lurid-flowered Cymbidium. A very remarkable epiphyte, with purplish-yellow flowers, which are produced on a short, drooping, sessile raceme, from the axil of a leaf. It grows from eight to ten inches high, and the leaves are from three to five inches in length, terete, fleshy, and green. It is a native of various countries in the south-eastern portion of the Old World, among which the principal are New Caledonia (where it was first discovered by Forster during the celebrated voyage of Captain Cook), the Marianne Islands, Japan, Ceylon, and Nepal. *Bot. Mag.* 3648.

NOTICES OF NEW AND RARE PLANTS

IN FLOWER IN THE LEADING NURSERIES IN THE VICINITY OF LONDON.

MESSRS. HENDERSON'S, Pine-Apple Place. *Azalea Indica Smithii.* We have previously noticed a fine specimen of this beautiful plant at the above nursery, but there are two plants of it now in flower, which we cannot refrain from adverting to here. The specimens to which we allude, are without doubt the most perfect instances of the successful cultivation of either the species or varieties of this splendid genus we ever before witnessed, and as far as we are aware, have never been surpassed. They are now so densely covered with their showy flowers, that it would be almost difficult to discern either branches or foliage, and they present to the eye one unbroken and uniform mass of living beauty, hitherto we believe unrivalled. Amongst the numerous beautiful varieties of *Cineraria* now in flower at this nursery, there is one called the *King*, which merits particular attention. It is of rather dwarf habits, and the flowers are of a lilac-coloured ground, beautifully tipped with purple. It grows very compact, and is an extremely beautiful and valuable addition to this interesting genus. As few plants are more truly ornamental than Cinerarias, the beautiful varieties which have been raised by Messrs. Henderson should be in the collection of every individual who has any taste for flowers.

MR. KNIGHT'S, Chelsea. A curious species or variety of *Gesneria* is now in flower at this nursery, and is remarkable for the tendency manifested by the flower-spike to incline downwards. The flower-stem grows erect to about a foot high, and then, as if it had suddenly come in contact with some object that impeded its growth, it becomes pendulous. In other respects it resembles *G. Cooperi*, and we should have been led to believe that the above circumstance had been caused by disease, were there not several plants of it growing in a similar manner. *Lœligia ornata.* This new, or at least, very rare plant, is now flowering at the nursery of the above gentleman, and like many other Proteaceous plants, the flowers are very pretty, but not strikingly beautiful; being of a brownish yellow colour. It is certainly an ornamental plant, and would doubtless, when profusely in flower, be an interesting object in the greenhouse. *Kennedia glaberata.* This pretty species of *Kennedia* was raised in the nursery of Mr. Knight about three years since, and is now flowering abundantly. Its elegant habits and showy blossoms, as well as the profusion in which the latter are produced, entitle it to the attention of every cultivator of greenhouse climbing plants.

MESSRS. LODDIGES', Hackney. *Dendrobium nobile.* We have pleasure in again directing the attention of our readers to this lovely plant, which is now flowering in the collection of the above gentlemen in a far superior manner to that in which we previously witnessed it. The great beauty and delicacy of its flowers, combined with the rapidity and luxuriance of its growth, will cause it to rank high in the estimation of every admirer of this charming tribe, and in point of real merit, we consider that it is inferior to no orchidaceous plant with which we are acquainted, though there are many which produce much larger and more showy blossoms. Several other species of *Dendrobium* are now most beautifully in flower, such as *D. aggregatum*, *secundum*, *aureum*, &c., the flowers of the latter of which are most delightfully fragrant, and towards the evening of each day perfume the whole house with their delicious odour. In the Camellia-house of Messrs. Loddiges, a more magnificent display of flowers can scarcely be conceived than are now exhibiting themselves. The extraordinary size and luxuriance of the specimens in this collection are well known to most individuals, and nearly the whole of them are now most profusely covered with their splendid flowers. We recommend all our readers, who reside at a convenient distance from the metropolis, to visit the collection of the above gentlemen, and we feel assured that they will experience a rich treat in witnessing their Camellias in their present state of perfection.

Mr. Low's, Clapton. *Zickia molle.* A pretty climbing plant is now in flower at this nursery, under the above name. It bears a striking resemblance to *Kennedia coccinea*, and we are inclined to consider it as a variety of that species; it is nevertheless a very interesting plant, and is well worthy of general cultivation. Some very fine specimens of *Statice arborea* are also again flowering in the collection of the above gentleman, and this valuable plant appears to produce its flowers in most abundant succession, which is certainly an important feature in its character. Several handsome varieties of *Cineraria* are now most brilliantly in flower, and merit the attention of every person who devotes any practical attention to the cultivation of greenhouse or half-hardy plants.

Messrs. Rollison's, Tooting. *Chorizema scorpioides.* This is a new and pretty species of *Chorizema*, and is now producing its flowers at this nursery. In habit it appears to be rather procumbent, and does not attain any considerable height, while the flowers are of a brownish yellow colour. Though inferior to some of the other species in the beauty of its flowers, it is an interesting plant, and deserves a place in every collection. A fine variety of *Clematis cœrulea* is also now exhibiting its showy blossoms at the above nursery; the flowers of *C. cœrulea* are composed of only six petals, while the present variety has eight, from which circumstance it has been appropriately designated *C. cœrulea grandiflora.* It is a truly good plant, and together with the original species, which is also now flowering at this nursery, should be in the possession of every cultivator of half-hardy climbing plants. We take this opportunity of stating that the orchideous plant which we noticed in our last number, as being in flower in the collection of these gentlemen, and which we then considered to be a species of *Oncidium*, has now proved to be *Cyrtochilum maculatum*, a genus very closely allied to *Oncidium. Phaleonopsis amabile* is still beautifully in flower, and is certainly one of the most profuse flowering orchidaceous plants which has been introduced to this country for some time.

Mr. Young's, Epsom. *Comesperma gracilis.* This is one of the prettiest and most interesting climbing plants with which we are acquainted, and though the flowers are small, and the plant slender and of slow growth, yet the peculiar gracefulness and elegance of the latter, and the great profusion of the former, as well as their being of a bright blue colour, render it a most pleasing and attractive object. It is a greenhouse species and entirely new, being at present we believe in few other collections besides that of the gentleman above named. *Cytisus racemosus.* A very fine specimen of this rare species is now flowering most abundantly at this nursery, and besides the beauty of its flowers and general appearance, it exhales a most delicious fragrance, which is agreeably perceptible at the farthest extremity of the house in which it is placed. *Asarum japonicum.* This is a very fine, we believe new, species of this curious genus. The flowers are of a dark brown colour, and are partly concealed by the foliage, but they are highly interesting and curious, and are full an inch across. It is most probably hardy, but has been kept in a frame in the above nursery, where it is now flowering.

NOTICES ON THE CULTURE OF NEW AND RARE PLANTS

IN THE LEADING NURSERIES IN THE VICINITY OF LONDON.

On *Leucothoe* (*Andromeda*) *floribunda.* At a period when it plainly appears that the climate of Britain is annually becoming colder, and the weather more rigorous, it is of great importance that such plants as are capable of enduring the most severe weather, should be generally known and cultivated; and more especially, when those plants are evergreen, highly ornamental, and produce their flowers in great abundance. In vol. iv. p. 101, we gave a drawing and description of the subject of this notice, and we were then very dubious as to whether the flowers would attain any perfection in the open air if the winter were very severe, as we there stated the singular fact that its flowers were formed in the autumn, which of course renders them more susceptible of injury from frost or cutting winds. Since that time, however, we have attentively watched the progress of some plants of this species in several of the London nurseries, particularly in those of Messrs. Rollison and Knight, and during the intense severity of the late season, not a flower-bud, nor so much as the points of any of the leaves, has been at all injured. In the nursery of the latter gentleman especially, some fine plants were left standing in the open ground, in an exposed situation, and without any protection, while others were constantly covered with a hand-glass, as the prevailing opinion seemed to be, that this plant was not quite hardy, or at least, that it would not endure very severe frost. The result, however, has sufficiently established the contrary fact, as those plants to which no protection had been given were equally healthy and luxuriant, and the flowers were as fine and abundant as those which had been covered with the hand-glass; thus clearly demonstrating that this plant is in the fullest and most enlarged sense of the term "perfectly hardy." At the present time, (May,) the plants in the collection of the above gentlemen are densely covered with their pretty white blossoms, and they have been in this state for nearly a month, forming amidst the general desolation caused by the extreme rigour of the past winter, a truly novel and interesting picture in the garden. It is scarcely necessary to observe, that a plant so very ornamental as the one here noticed, and which is capable of enduring such weather as destroys nearly every plant that before had any claims to be considered hardy, is one of the most truly valuable hardy shrubs at present known in our collections; and we would strongly recommend all our readers who do not already possess it, to procure plants of it immediately, as, notwithstanding the interest that always attaches itself to hardy *evergreen* shrubs, the subject of the present remarks is one of the most profuse flowering plants with which we are acquainted. For further particulars relative to its cultivation, we refer our readers to the page before quoted, and though by these observations we by no means wish to deter cultivators from keeping a few plants of it in the greenhouse, where it will produce a very ornamental effect, we are desirous of seeing it more generally cultivated as a hardy shrub, as we know of none (*Rhododendrons* excepted) that is more worthy of a place in every garden, whether a large or a small one.

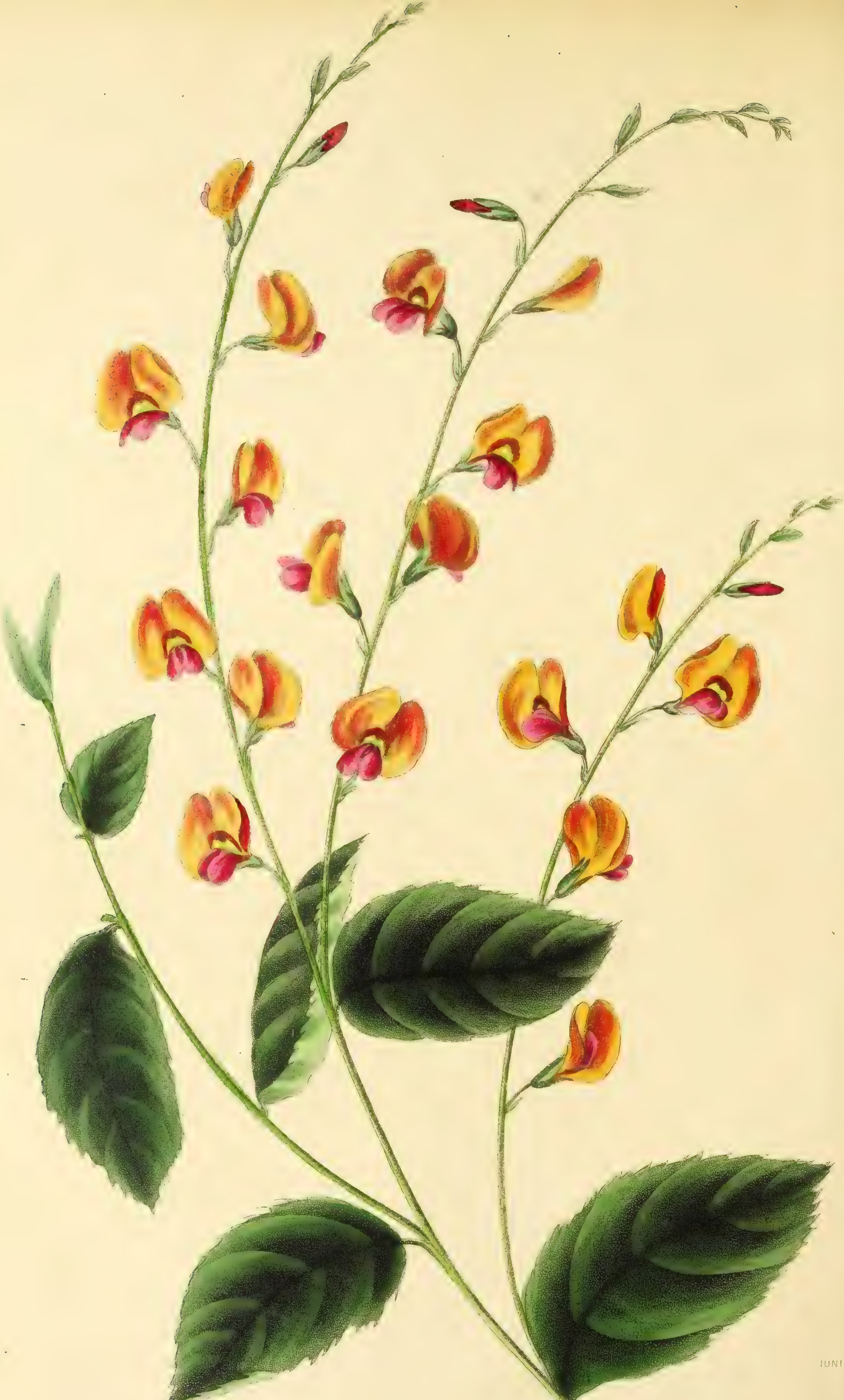
As we have observed that many cultivators appear to treat *Deutzia scabra* as a greenhouse, or half-hardy plant, it may be well here to remark, that we have witnessed plants of it which stood out in the open ground during the whole of the last winter with perfect impunity, as they did not sustain the slightest injury; therefore there is not the least doubt that it is as hardy as any of the common species of *Philadelphus*, to which it is so nearly allied.

OPERATIONS FOR MAY.

Stove and orchidaceous plants will now require to be abundantly supplied with water, but much discrimination is necessary in administering it, as an undue quantity of it is extremely injurious. As a general rule, it may be observed that those plants with hard woody stems, and of slow-growing habits, must be watered sparingly and cautiously; while for those with more succulent stems (such as *Begonias*) and of stronger and more luxuriant growth, a much greater quantity of it is necessary, and they should be examined two or three times during each day, and water supplied to them if requisite. It is impossible, however, to prescribe particular rules for performing this operation, as much depends on the manner in which the plants are potted, and the quantity of drainage given to them; therefore the cultivator must be guided in a great measure by the appearance of the soil. Orchidaceous plants should now be shaded during the heat of the day (except in cloudy weather), and these, as well as stove plants, will derive much benefit from a slight syringing towards the close of each day, previous to which the house should be closely shut up. This will tend to destroy insects, and also invigorate the plants, and preserve them in a healthy condition. From any of the species of stove plants that are now producing young shoots, cuttings may be taken if an increase is desired, and treated in the usual manner.

The plants in the greenhouse department are so numerous and varied, that no specific directions can be given for their general management. Those *Camellias* which have now ceased flowering will require to be slightly stimulated, by being placed in a moderate temperature, and frequently syringed, in order that they may form good new shoots, and an abundance of flower-buds. Inarching may now be successfully performed, but great care is necessary to preserve the plants so treated from the powerful rays of the sun, which generally prove fatal to the young grafts. The chief point to be attended to in the cultivation of New Holland plants at this season is watering, and in no case should water be applied indiscriminately through the rose of a pot,—a practice very generally adopted, but always more or less injurious. Air must be freely admitted to the greenhouse by all practicable means, except during heavy rains or very rough winds. *Cactæ* that have not yet flowered should now be placed in a moist heat, and rather liberally watered, to enable them to flower in perfection, and also to induce them to grow. *Pelargoniums* should also now be placed in a slightly humid heat, as near as possible to the glass, and they will produce their flowers much finer and better. Cuttings of any species of greenhouse plants may now be struck with facility if required. Plants that have been forced into flower, and have now ceased flowering, should be freely exposed to light, to enable them to ripen their wood; they should also have an abundance of water. About the end of the month, greenhouse plants may be placed out in the open air ; but this practice should never be adopted unless due precaution is taken to preserve the roots from drought, by placing moss or litter round the pots. Without this or some similar preventive, this system is extremely injudicious, and is highly prejudicial to the plants that are subjected to it.

In the flower-garden, many important particulars will require attention this month. *Pelargoniums*, *Calceolarias* and other greenhouse or tender plants, may now be planted out in the beds or borders of the flower-garden, as also may *Verbenas* and *Petunias ;* they must be well watered in dry weather till they become established, and any tendency to flower prematurely should be timely checked, which will enable them to acquire sufficient strength for producing their flowers in greater perfection at the proper time. Those which require supporting, should be at once neatly fastened to a stake, and such as are of trailing habits, or are desired to be kept dwarf, should be pegged down at the time of planting, as they will remain unsightly throughout the whole season, if these particulars are long neglected. *Dahlias* may be planted out about the middle or latter end of the month, and these should also be staked at the time of planting. Annuals that have been sown in patches, should be properly thinned, and the thinnings, if taken up with care, may be transplanted into other parts of the garden if required ; those which have been raised in hotbeds must now be planted out, and these, as well as herbaceous plants, should be timely trained or supported, as much of their beauty, in the ensuing season, depends on attention to this important point. *Rhododendrons* should be abundantly watered during this month if the weather is dry, otherwise they will not flower well.



IUNE 1. 1838

Chorizema cordata.

CHORIZEMA CORDATA.

(HEART-SHAPED LEAVED CHORIZEMA.)

CLASS.
DECANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
LEGUMINOSEÆ.

GENERIC CHARACTER.—See vol. iv. p. 153.

SPECIFIC CHARACTER.—*Plant* shrubby. *Stems* numerous, erect, smooth, green, graceful. *Branches* slender, spreading, woody. *Leaves* subsessile, cordate, ovately oblong, obtuse, spinose, reticulate, with inconspicuous hairs. *Racemes* terminal or axillary, generally destitute of leaves. *Flowers* very abundant. *Bracteæ* awl-shaped, on short footstalks, opposite, bristly. *Calyx* two-lipped; upper lip two-toothed, lower one three-parted. *Vaxillum* two-lobed, of a deep red colour, spotted with yellow at the base. *Wings* and *keel* purple.

THE subject of the figure here given, though inferior to *C. ovata* in the splendour and brilliancy of the colours of its flowers, is superior to all the other species of this genus with which we are acquainted in the size and beauty of its foliage, and the boldness of its habits. It is remarkable that the plants comprising this genus, though conspicuous for the rich and beautiful colours of their flowers, are generally, and indeed we may say universally, deficient with regard to foliage; the present plant, however, is an exception to this rule, and may be considered as being decidedly in advance of all the other species in this respect.

The leaves of the plant here noticed approximate in form to those of *C. ilicifolia*, and are also, like that species, spinose; but they are much larger and more handsome, and the plant grows more vigorously and luxuriantly, and attains to a greater height and size, than any of the species which have previously been cultivated in our collections.

On the subject of its cultivation it would be superfluous to say any thing here, after the copious and detailed directions given under the head of *C. ovata* in vol. iv. page 153 of this work, and it is only necessary to refer our readers to that article, and state that the principles there laid down will be found equally applicable to the plant now before us.

In the *Bot. Reg.* page 10, New Series, Dr. Lindley informs us that this species is a native of the Swan River colony, and was raised in the garden of R. Mangles, Esq. Being previously acquainted with this circumstance, we had named this species *C. Manglesii*, in honour of the above gentleman; but as the gentleman before alluded to has since given it the name under which it now appears, and as we always prefer such specific names as refer to the character of the plant, to those which are given in compliment to the individual who introduces it, or with whom it first produces its flowers, we willingly adopt the present appellation.

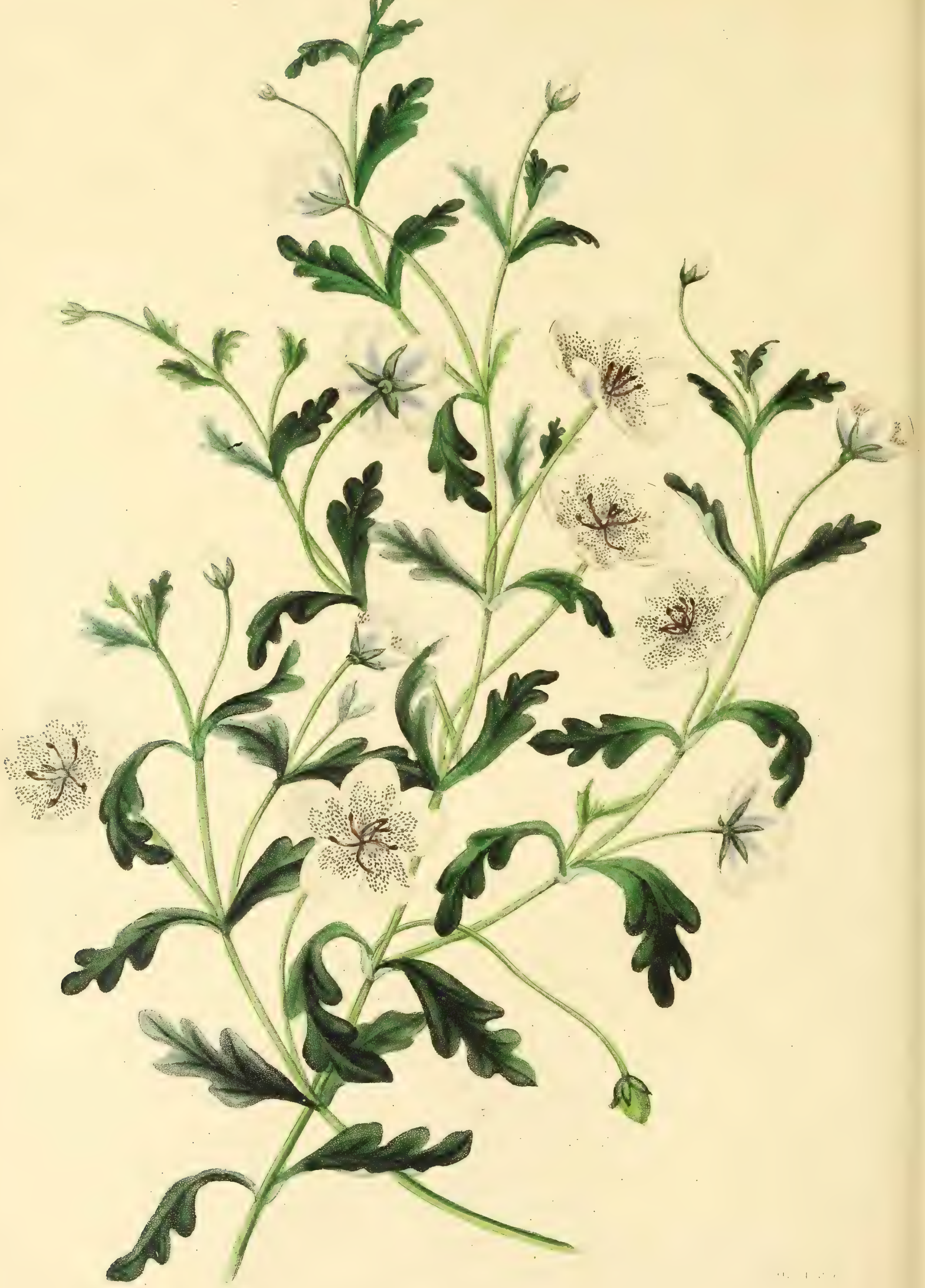
The plant from which we procured the present drawing flowered in the collection of Messrs. Rollison, Tooting, in December, 1837; from whom, and Mr. Low, Clapton, as well as most other nurserymen, plants of it may be obtained.

Since our drawing was taken, we have received a communication from Mr. D. Mackay, the intelligent gardener of R. Mangles, Esq., of Sunning Hill, Berks, from which we cannot doubt that our figure, being obtained from a very small plant, falls short of conveying an adequate representation of the surpassing beauty of this truly valuable plant. From the communication above alluded to, as well as from a splendid specimen which we witnessed in flower at the Clapton Nursery in March last, we are decidedly of opinion that this is not only the best known species of the genus, but that it is one of the most beautiful and valuable greenhouse plants at present cultivated in our collections. Mr. Mackay states, that the leading shoots of this plant usually produce from ten to fifteen flowers on a terminal spike, and from these and the lateral shoots, a constant succession of flowers is maintained, from the beginning of September till the following midsummer. The shoots are annually lengthened two feet or more, and plants produce flowers when only six inches high.

From these facts there can be little doubt that this species will speedily attain the height of six or eight feet; and if the plants are allowed an abundance of pot room and light, to enable them to form strong and vigorous shoots, it will certainly be a most magnificent feature in a collection of greenhouse plants.

We should be deficient in public duty and gratitude if we did not here bear testimony to the genuine philanthropy displayed by the gentleman to whom we are indebted for the introduction of this truly excellent plant, and who has contributed very largely to enrich our collections with so many delightful and attractive ornaments, as well as exerted himself with such zeal and spirit to promote the interests of floriculture in general.

The generic name is explained vol. iv. page 156.



Nemophila atomaria

NEMOPHILA ATOMARIA.

(SPECKLED NEMOPHILA.)

CLASS.	ORDER.
PENTANDRIA.	MONOGYNIA.

NATURAL ORDER.
HYDROPHYLLEÆ.

Generic Character.—See vol. iii. p. 151.

Specific Character.—*Plant* annual. *Stems* procumbent, pale green, much branched, clothed with bristly hairs. *Leaves* opposite, pinnatifid ; lobes ovate, mucronulate, hairy. *Flowers* solitary, on slender peduncles, of from one to two inches long, also hairy. *Corolla* campanulate, white, with numerous blue specks. *Calyx* campanulate, hairy, green ; segments ovate, mucronulate. *Ovarium* round, hairy.

There are few individuals, we should imagine, who make any attempts at cultivating those delightful plants (popularly termed annuals) which decorate our flower beds and borders in the summer months, who are not now well acquainted with the lovely species of this genus (*N. insignis*), figured vol. iii. p. 151 of this work, and it has doubtless now found its way into most collections.

The present plant is neither so bold and handsome in its habits, nor does it produce such showy blossoms, as the one above alluded to; nevertheless, to all lovers of simple and pretty plants, it will be found to possess many attractions, and we have no doubt that when it becomes more extensively known, it will be very generally admired and cultivated, not only on account of the beauty and elegance of its blossoms, but also for the great profusion in which they are produced. These two latter properties appear to us to be the chief and most important features which are expected or required in plants of this description ; and though large and showy flowers are highly desirable, they cannot be considered essential to render an annual plant worthy of attention and cultivation. Under this impression we have been induced to introduce the subject of the present drawing to the notice of our readers, feeling assured that it contains sufficient merit to entitle it to a place in any collection.

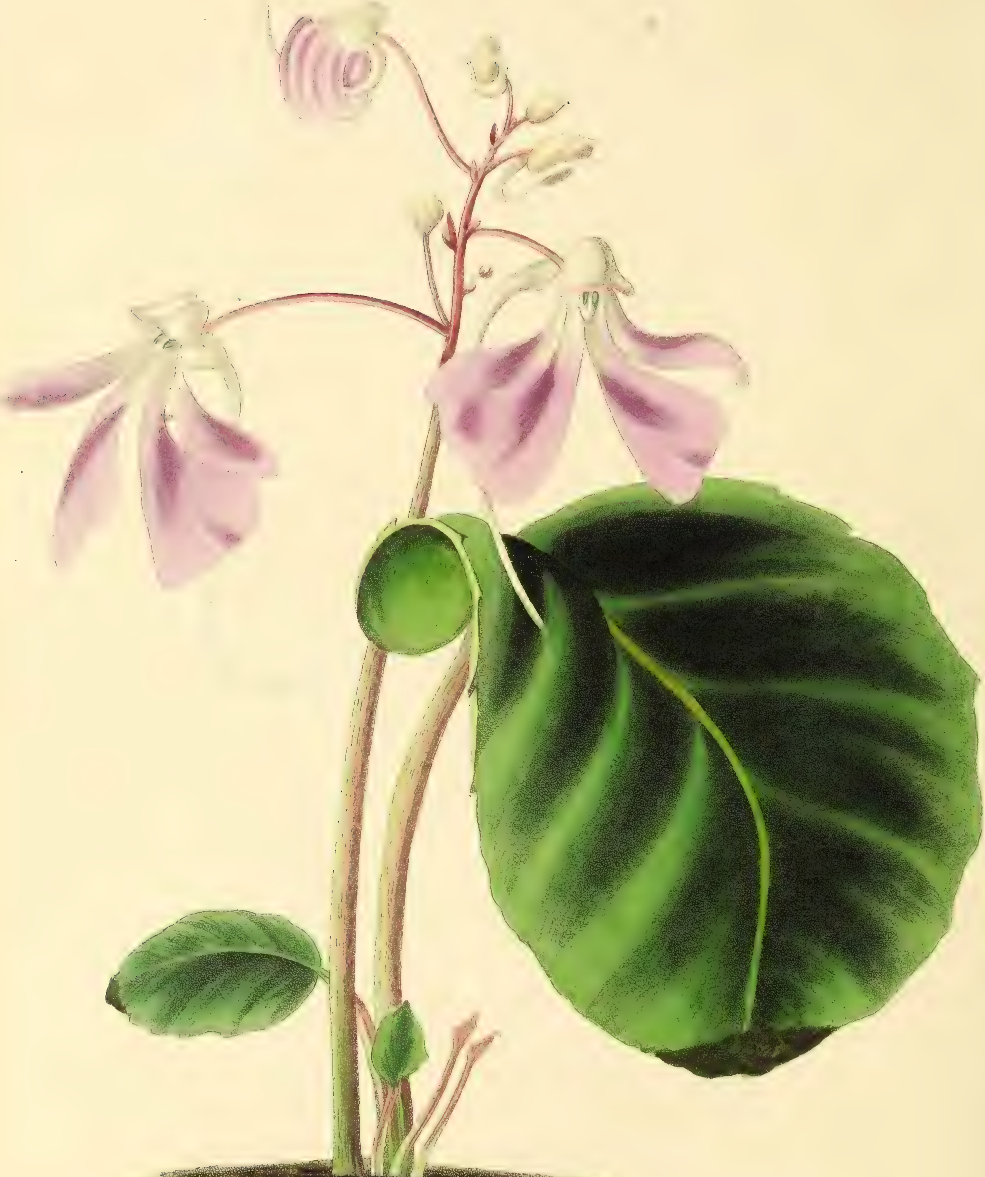
In the nursery of Mr. Young, Epsom, this plant was kept in a pot, and placed on the shelf of a greenhouse, near the glass, in which situation it flowered very abundantly, and formed a pleasing and interesting contrast with plants of shrubby habits; but we feel confident that it will prove as hardy as *N. insignis*, and it would undoubtedly attain to a much greater degree of perfection if planted out in the open air, in the bed or border of the flower garden, about the month of May, or perhaps June. Still, a few plants kept in pots in the greenhouse would have a most imposing effect, and, by judicious management with regard to the times of sowing, it may be brought into flower in this situation in almost constant succession, with the exception of two or three months in the depth of the winter.

This species requires no peculiar care or attention with regard to cultivation, as it will thrive well in any light loamy soil, with the treatment usually given to half-hardy annuals; but, like *N. insignis*, it will doubtless ripen seeds better in those plants which are kept in the greenhouse. Dr. Lindley states (*Bot. Reg.* 1940) that it is probably a native of New California, and that seeds of it were transmitted to this country from the Imperial Garden at Petersburgh.

Our liberal contributor, Mr. Young, of the Epsom nursery, furnished the subject for the present drawing in December 1837, and of that gentleman we believe plants or seeds may be procured, as well as of most other nurserymen and seedsmen.

The generic name is explained vol. iii. p. 152.

The specific name applies to the little blue-coloured spots with which the corolla of the flower is so liberally marked.



Impatiens scapiflora

IMPATIENS SCAPIFLORA.

(STEMLESS TOUCH-ME-NOT.)

CLASS.
PENTANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
BALSAMINEÆ.

GENERIC CHARACTER.—*Anthers* five, three of which are two-celled, and the two in front of the upper petal are only one-celled. *Stigmas* five, joined together. *Capsules* prismatically terete, elongated, with the valves turning inwards from the base to the top, and expelling the seeds when touched. *Peduncles* axillary, branched, many-flowered. *Capsules* smooth. *Leaves* alternate, very rarely opposite.

SPECIFIC CHARACTER.—*Scape* radical, bearing a raceme of long-stalked flowers. *Leaves* roundish, cordate, many-nerved, entire; spur longer than the pedicel.

THE accompanying figure represents a plant, which, though small, is perhaps one of the most elegant and interesting objects which adorn our hothouses and stoves. When plants are introduced to this country from tropical regions, we naturally expect to find them of rapid-growing, strong, large, or even gigantic habits, but occasionally we meet with a humble yet lovely plant, like the present, whose dwarf size and delicate blossoms seem formed expressly for the purpose of ornamenting such parts of our stoves in which it would be impossible to place those of larger growth; and as plants of this description are comparatively rare, they possess additional interest and value. The most casual observer, in walking through our plant houses or stoves, cannot fail to remark how peculiarly adapted such plants as the present are for placing on the front stage or shelf of the house, and how equally convenient those shelves or stages are for the purpose of exhibiting these pleasing and delightful objects to the greatest advantage; for, plants of similar habits and elegance to the one here represented, cannot be placed too near the eye, or in too conspicuous a situation, as the more closely they are examined, the sooner will their beauties be discovered, admired, and appreciated.

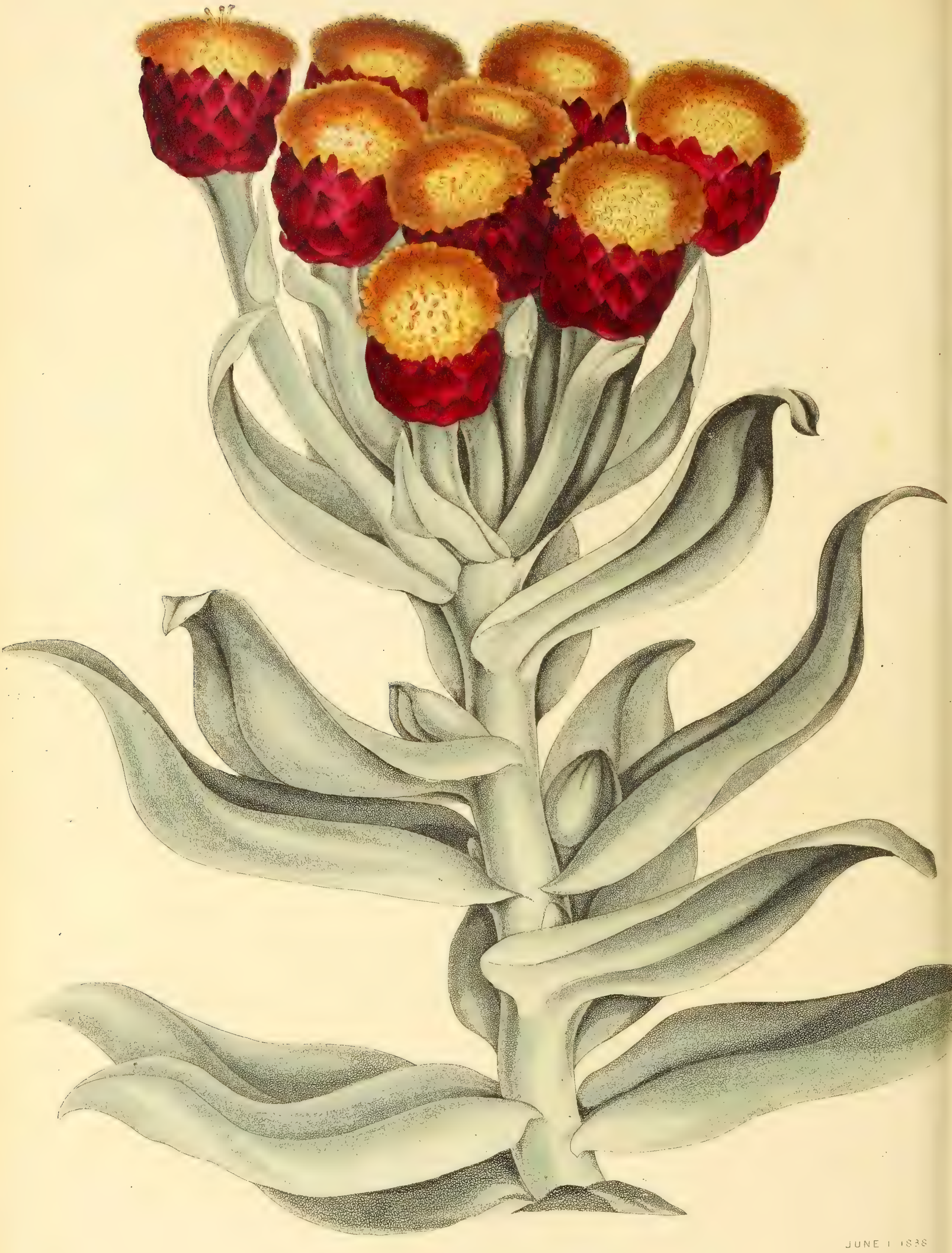
To all persons acquainted with this genus, a remarkable distinction is at once manifest between the species here noticed and those previously known in this country, as the usual habit of these plants is to produce their flowers and foliage on stems which are emitted from the roots, or to be, as it is usually termed, caulescent, while the plant now before us is perfectly stemless, and both flowers and leaves spring immediately from the root.

Little is yet known with regard to its cultivation, but it is certain that it requires to be kept in a dormant state during the winter months, as the foliage decays immediately after it has ceased flowering; in the spring, or perhaps the summer, it should again be excited into action, by repotting and administering water to it, though this latter should be done with caution. It appears to flourish in a rather rich soil.

The drawing here given was taken from a plant which flowered in the nursery of Messrs. Young of Epsom, in October 1837, where it was received a short time previous from the Glasgow Botanic Garden, and plants of it may be procured from this nursery. When in flower it was the delight and admiration of all who witnessed it, and was a most attractive ornament to the stove.

The generic name refers to the singular fact of the capsules bursting when touched or placed in contact with any object, and evolving the seeds.

The specific name of course applies to the habits of the plant.



JUNE 1 1838

Astelma eximium.

ASTELMA EXIMIUM.

(FINE ASTELMA.)

CLASS.
SYNGENESIA.

ORDER.
POLYGAMIA SUPERFLUA.

NATURAL ORDER.
COMPOSITÆ.

GENERIC CHARACTER.—*Receptacle* naked (neither chaffy nor honey-combed). *Pappus* feathery, sessile; *rays* connate at the base. *Involucrum* (calyx) imbricated, with scarious scales, the innermost of which are connivent. *Bot. Reg.* 538.

SPECIFIC CHARACTER.—*Leaves* sessile, ovate, close, erect, downy. *Corymb* sessile. *Loudon's Ency. of Plants.*

THE genus *Astelma*, of which the species here figured was the origin, was first separated from *Gnaphalium* by that distinguished botanist Mr. R. Brown, on account of the difference in its character to that of the genus just named, which will be perceived by reference to the description above given. Since that time, however, it has received several accessions from the genus *Helichrysum*, referred hither by Mr. D. Don, and it is so closely allied to the latter genus, that Mr. Brown states the only difference that exists is in the calyx of *Astelma* being rayless.

Of all the species of the genus, (none of which are by any means destitute of interest,) the one here represented is by far the most splendid, and its fine crimson-coloured globular blossoms constitute it in all respects worthy of the specific appellation which has been bestowed upon it, and which may correctly be rendered "superlatively excellent." Besides the striking beauty of its flowers, and the liberal manner in which they are produced, it possesses the additional recommendation of being one of those plants popularly termed "everlasting flowers," that is, the scales of its flowers, being of a dry chaffy nature, do not rapidly decay, but, maintaining the brightness and freshness of their texture, remain expanded a considerable length of time. On this account it merits more general attention and cultivation than it has hitherto received, and should be in the collection of every individual who possesses a greenhouse, as it is one of a few permanently valuable old plants, to which a great degree of interest will always be attached as long as the love of flowers finds a place in the breast of man.

We have never experienced any particular difficulty in the cultivation of this plant, although, as it does not produce young shoots freely, it can seldom be propagated by cuttings, and the best method of multiplying it is by seed, which frequently arrives at maturity. This should be sown early in the spring in pots or flats of sandy heath-mould, and placed in a slight heat (bottom heat is best) till it vegetates, when the young plants may be potted off and kept in a greenhouse or frame. With regard to the treatment of established plants, it may be observed, that they should be potted in a soil composed of two-thirds sandy heath-mould, (that which contains a large proportion of small gritstone and fibre should be preferred,) and one-third light sandy loam. An efficient drainage is of first importance, for if the water applied to the surface does not flow freely through the soil, and find ready egress at the bottom of the pot, this plant will never succeed well. In watering plants of this species, care must be taken not to administer water unless actually required, and also not to allow the soil at any time to become too dry, in which latter case it would separate itself from the sides of the pot, and all the water subsequently applied would escape through the fissure thus formed between the pot and the soil, while not a particle of it would be conducted to the roots; the result of which would be, that the plant would speedily and suddenly perish, particularly if much exposed to solar light. No moisture should ever be allowed to rest or remain on the leaves, especially in the winter season, as, being of such a downy or cottony nature, and consequently very retentive of moisture, they will frequently rot if this is not attended to.

This beautiful species is a native of the Cape of Good Hope, from whence it was introduced to this country in 1793, by Colonel William Patterson. Our drawing was taken from a plant which flowered in the greenhouse at Chatsworth in the summer of 1837. Its usual time of flowering in the greenhouses of this country is the month of June, the flowers generally remaining expanded till August or September.

HINTS ON A SUCCESSFUL METHOD OF CULTIVATING GARDENIA RADICANS AND FLORIDA.

In most gentlemen's gardens, and even in those wherein only a few greenhouse or stove plants are cultivated, either or both of the species above named, the former particularly, may usually be met with; and it is remarkable, that although they are such universal favourites, few individuals succeed in growing them to perfection. The cause of their being so generally admitted into collections, whether of the highest or lowest grade, may be traced to the striking contrast between their deep green and shining foliage and their white flowers, but more especially to the delicious fragrance resident in the flowers, which, unlike that of most odoriferous plants, appears to be almost universally agreeable. Notwithstanding, however, that they are so generally admired, the majority of cultivators seem contented to have them in a sickly and languishing condition, either from the attacks of insects or from some injudicious treatment to which they are subjected, and few appear desirous of investigating their true nature and habits, for the purpose of deducing some detailed and improved system of cultivation that will be found appropriate to them,—the only means whereby any degree of success can be expected to be attained.

In pages 226, 227 of the first volume of this magazine, the cultivation of these two species has been brought before the reader's attention, and reference may still be advantageously made to that article, so far as regards propagation; but, having recently ascertained a few important facts which have led to some improvement in the general cultivation of these plants, we have deemed it advisable to add to our original remarks the result of subsequent investigation and experience. If the reader refer to the article above alluded to, he will find ample directions for propagating these plants and bringing them to a state ready for flowering, as well as some few particulars relative to their general management. It is well known that they require a more than ordinary degree of atmospheric moisture to sustain them in health and vigour, and where this is not supplied they invariably suffer to a greater or less extent. To afford them this necessary humidity, some cultivators keep them in a hotbed frame, which system, in the absence of a more approved one, we have likewise advocated in the article before mentioned; a sufficient degree of moisture being of course maintained in such a frame by the evaporation from the fermenting manure. But, however congenial such a situation may be to their natural habits, the plan is certainly objectionable, inasmuch as the plants are kept in a state of entire seclusion, and their beauty can only be seen and enjoyed during the brief period of their removal to the stove or greenhouse while in flower; and at the expiration of this time they are invariably found to be much injured by the great change in the condition of the atmosphere. Besides which, in an arid atmosphere it is almost impossible to protect these plants from the attacks of the red spider, to which they are extremely liable, and which, as is well known, prove injurious to them and all other plants.

To preserve them from these destructive enemies, as well as to render them objects of ornament at all seasons of the year, by constantly maintaining their foliage in a healthy and luxuriant state, the following system of management which we saw practised in the collection of an eminent horticulturist some time since, will, we have no doubt, be found effectual. After the plants have been struck, according to the directions to which we have before alluded, and potted into sixty-sized pots in a compost comprised of one-third heath-mould, one-third turfy loam, and one-third white sand, which has been previously well incorporated, they should be placed as closely as possible to, or on the rim of, a water cistern, at the hottest end of the stove, in which situation they will receive all the evaporation arising from the water, which will prove highly beneficial to them, and cause them to grow most rapidly and luxuriantly. If they have been struck in the spring months, they should be slightly shaded on being first removed to this place, and will require a liberal supply of water; but if propagation be deferred till the autumn, shading will be wholly unnecessary, and water must be moderately and judiciously applied. We prefer the autumnal months for propagating these plants, because they will then be capable of producing flowers in the succeeding season. During the winter they will perhaps require shifting once or twice, which should be promptly attended to; and at each shift the compost used should be progressively enriched, by dispensing with the greater part of the sand and substituting leaf-mould or well-rotted manure. As the spring advances and the plants become larger and stronger, they should be again shifted into pots of such a size as they may individually require; and as the days lengthen, and the heat of the sun becomes more powerful and enduring, a number of pots should be placed in an inverted position in the bottom of the cistern before named, and on these the pots containing the subjects of this article should be stood, keeping just as much water in the cistern as will barely reach the bottom of the pots in which the plants are growing, but being careful not to immerse them in it. It may here be observed, that in no case should the water be allowed to rise above the level of the bottom of the pots in which the plants are kept, as scientific researches and investigations have shown that all plants discharge certain excrementitious fluids, which, if suffered to remain about the roots, will be productive of great injury to them, and of course by plunging the plants in water these rejections, although at first exuded into the water, would be again imbibed by the plants. Therefore, as we before observed, the pots containing the plants should never be immersed in the water, unless the cistern be occasionally emptied and filled with a fresh supply of water, in which case the above system would doubtless prove useful. The good effects produced upon the plants by subjecting them to this mode of treatment will soon become evident by their requiring another shift, which will most probably be the only one they will need during the season. At this time of shifting, the compost should be made still stronger by another addition of the materials before recommended; and it is necessary here to remark, that the pots used at each shift should be only one size larger than the preceding, as nothing can be more injurious to plants than placing them in pots which are too capacious, and nothing is more beneficial to such plants as the present than frequent shifting, provided it is performed with skill. After the plants have received their final potting, they must be constantly well watered, and the flower buds will speedily appear; at this stage of their growth especially, as well as throughout the whole preceding and succeeding period, great care should be taken to prevent the ravages of insects. The red spider, however, their greatest enemy, will be effectually repelled by the evaporation from the water, and the green or black fly may be easily destroyed by fumigating the plants with tobacco smoke.

When a considerable number of flowers are expanded, the plants may be removed from the cistern and placed in a cool part of the stove, (not in the green-house,) where they will remain in flower for a considerable length of time if they are slightly shaded from the powerful rays of the sun, and liberally supplied with water. After their removal from the cistern, and even while they are placed in that situation, they should occasionally be syringed with water over the leaves and branches, which will tend much to invigorate them and keep them in a healthy condition. When in flower they might likewise be introduced to the drawing-room if desired, where their delightful fragrance would render the atmosphere very grateful and agreeable for a long time, and where also, as they would be efficiently shaded, they would remain in flower for several weeks. After the flowers have faded, the plants may be kept in a cool part of the stove through the autumn and winter, with due attention to watering them and preserving them from insects; and early in the spring they should be re-potted, and again placed in the situation before recommended.

These remarks refer more particularly to *G. radicans*, but this treatment may be successfully applied to *G. florida*, and if these plants are carefully and faithfully managed according to the directions thus given, we are convinced that they will no longer be seen in the sickly and unhealthy condition in which so many of them are now found; and, instead of being kept shut up in frames, where they are rather an incumbrance than an ornament, they will be constantly placed in a situation where the rich glossy appearance of their deep green foliage can be seen and admired, both after the flowers have withered and before they are produced. It should, however, be added, that the cistern in which the plants are placed must be a rather shallow one, lest they should be too much deprived of light by the sides of the cistern, otherwise, they will be much benefited by being kept at a moderate distance from the glass.

A CONFUTATION OF SOME POPULAR ERRORS RESPECTING THE CULTIVATION OF CLIANTHUS PUNICEUS,

WITH A FEW DIRECTIONS FOR ITS GENERAL MANAGEMENT.

Those of our readers who possess the second volume of this work, will find an elaborate description of the botanical character and general appearance of this beautiful plant at page 169, accompanied by a coloured plate. In an article from the Horticultural Society's Transactions there quoted, it is stated that this plant succeeds best in a border of peat soil in the open air. Subsequent experience and investigation have taught us that cultivators may greatly err by adopting unreservedly the suggestions of persons, published so soon after the introduction of any plant, as, in the instance now under consideration, it has been sufficiently proved that the subject of this notice will neither succeed well in peat or heath soil, nor will it endure the open air in this country during the winter months, at least when the weather is very severe.

Cuttings of the young wood will strike with the utmost facility, if planted in pure sand and covered by the sliding light of a small frame, or by a bell-glass in a propagating house, taking care to shade them from the heat of the sun, and also to guard them from damp by watering very cautiously. In three or four weeks the young plants will have rooted, and may be transferred to separate pots, in a compost of two-thirds sandy loam and one-third heath-mould, and kept in a gentle heat for a few days till they become established. If thisoperation is performed in the spring, the plants may then gradually be hardened, and ultimately planted out in an open border with a south aspect, but in this situation, if unceasing attention be not devoted to them, the cultivator will frequently find himself disappointed in all his expectations, through the depredations of the common shell snail; for, like the laburnum and other members of the natural order Leguminosæ, this plant is very liable to its attacks.

This pest of the garden deposits its pellucid globular eggs in the soil, and numbers suddenly abound where none had been suspected; they devour every leaf, and this plant, which for symmetrical beauty is almost without a rival, becomes an apparently lifeless and deformed object. On the contrary, should none of these enemies appear to prey upon it, the Clianthus will thrive well in a prepared border of light loamy soil, made rich by pure leaf-mould or well-rotted manure; and, in such compost, it will grow in the richest luxuriance, and attain the height of several feet. Yet notwithstanding this plant will grow so vigorously in the open air during the summer months, it can by no means endure a rigour equal or approximating to that of the late winter; and the most careful protection has been found insufficient to preserve it alive in the open ground. Still we have seen it stand through the two preceding winters in a sheltered situation in the open ground, with a good protection of mats, though even then the young shoots and flowers were much injured; and we feel convinced that it will never prove sufficiently hardy for our climate. Some cultivators have practised the system of placing this plant out in the open ground early in the spring, and removing it again into a pot in the greenhouse in the autumnal months; but, however luxuriant this may have caused the plants to grow, it is a bad practice, and for this reason:—the flowers of the *Clianthus*, though they seldom expand till the spring, are usually formed in the autumn, and if the plant receives any check during the period of their formation, either from shifting, change of temperature, or want of water, the buds invariably fall off, and the plant consequently never flowers: and as the flowers are the chief attractions which this plant possesses, the system just referred to should never be practised by any individual who wishes to flower it in perfection; indeed we consider that, except for the sake of experiment or novelty, it is extremely injudicious to place this beautiful plant in the open air. It might certainly be trained with advantage against a wall with a south aspect, if ample protection were afforded to it during the winter months, but even in such a situation it is only capable of enduring mild and favourable winters, and can scarcely be termed a half-hardy, much less a hardy, plant. We consequently recommend all cultivators to treat it as a greenhouse plant, in which situation, if properly managed, it will form one of the most splendid ornaments at present known in our collections.

Like many other plants, however, the one here noticed is seldom seen cultivated in the perfection to which it is capable of being brought by judicious attention to its habits, as few individuals exert themselves for the purpose of eliciting its true nature, or award it that attention it so justly merits. We shall therefore here point out the prominent features in its cultivation which we have learnt by experience are most important.

The first point on which cultivators generally have erred, is, as we before hinted, with regard to soil, and we now repeat that the soil we have recommended for this plant in the open ground, is equally suitable for it when planted in pots, and that heath soil may be either wholly dispensed with, or used in very small proportions. In potting it, good and efficient drainage is indispensable; and though attention to this particular is so generally recommended in horticultural publications, it is necessary particularly to insist upon it with regard to this plant, as it is too frequently neglected by cultivators, and in all such cases the usual bad effects speedily manifest themselves. Another prevalent error in cultivating this plant is under-potting it; for how can it be expected that a strong and rapid-growing plant like the present will attain any perfection, unless the roots, which are the principal sources of nourishment, are allowed sufficient room to extend themselves? It is necessary here particularly to reiterate what we have elsewhere declared, that we deprecate the practice of placing small plants in large pots for the purpose of saving trouble,—as no advantage can be derived from a saving of trouble which is effected at the expense of the health and beauty of the plant,—and that, whenever we recommend cultivators to allow a plant an abundance of pot room, we mean, that it should be *frequently* and *gradually* shifted into pots of a larger size, as its growth may require, till it either attains its proper height and size, or till further shifting appears unnecessary. With regard to the subject of the present article, we would suggest, that, instead of keeping it in pots, which must necessarily check its growth, it should be planted in a prepared compost in the bed or border in the interior of a greenhouse or conservatory, where we have not the slightest doubt it would form a most handsome and attractive object. In this suggestion we are borne out by the experience of many cultivators who have grown this plant in the open ground, as it has invariably grown more vigorously when thus treated than when kept in a pot. Besides the prevailing erroneous practices in the particulars of soil and potting already noticed, there are few cultivators who allow this plant a sufficient quantity of water to the roots, and still fewer who occasionally apply water to the leaves and branches with a syringe. The former of these operations must strike every intelligent cultivator as absolutely essential to a plant of such luxuriant habits, but the latter, experience alone has taught to be necessary; for, unless particular attention is paid to it, or the atmosphere of the house is kept slightly humid, (which is almost impracticable in the greenhouse,) this plant is frequently attacked by the red spider, and its beautiful green foliage rendered yellow and unsightly.

In concluding these somewhat lengthened remarks upon a plant, which it must be allowed possesses more than ordinary interest, we would especially beg the attention of our readers to our proposition with respect to planting the *Clianthus* in a border in the greenhouse; as by this system the evils attendant upon insufficient pot room would at once be obviated, and there would be little danger of the plant suffering for want of water. We may add, that, although it is not capable of enduring severe weather in the open air, it may be safely kept in a cold frame that is well protected, as we are assured by a respectable correspondent that it remained during the whole of the late winter in a pot in a cold vinery without losing a leaflet, and though from one to three degrees of frost occurred several times in the house, it did not sustain the slightest injury.

REMARKS ON THE INFLUENCE OF CLIMATE ON PLANTS.

ARTICLE I.—ON THE INFLUENCE OF LIGHT.

Every individual who possesses any knowledge of the habits and appetences of the members of the vegetable kingdom, or who has exerted himself in the slightest degree to ascertain and investigate the various relations subsisting between plants and the atmosphere, must be aware that the elements constituting that atmosphere, and which operate upon plants through its medium, exercise a most important agency on the various functions of vegetable life, and according as they are more or less adapted to the peculiar structure and constitution of individual plants, in the same degree they are deleterious or nutritive. It is a remarkable and interesting fact, that, in their natural state, or that in which they spontaneously flourish, certain plants are only to be found in those localities wherein the state of the atmosphere, as it regards heat or cold, humidity or aridity, and several other elementary constituents which affect plants, is perfectly consonant to their peculiar habits, and supplies them with the requisite stimulus and nutriment to enable them to develop their flowers, mature their seeds, and otherwise propagate or multiply their species. It is also equally notorious, that when the same plants are removed from their natural situations, and placed in others where a due degree of those atmospheric principles is not afforded, the plants in consequence speedily languish, and ultimately perish; indeed, it is universally admitted, that though diversity of soil has a most extensive influence upon plants and vegetables, it cannot be said to affect them so materially as variation of climate, in which term we propose to include, in popular language and for practical purposes, the three leading particulars of light, heat, and moisture. With this conviction powerfully impressed upon our minds, we have been led to ask—" in what way can a knowledge of the particular influence of climate be brought to bear on horticultural science, so as to assist and direct the gardener in his endeavours to cultivate any plant or tribe of plants to the highest degree of perfection?" The answer to such a question seems obviously this—by teaching him to adopt the same treatment towards each individual plant or tribe of plants which those plants receive from the bounteous and wise hand of nature in their wild and native state. When plants are introduced to this country from foreign parts, the gardener or amateur naturally inquires whether they were collected in tropical, temperate, or colder regions, and from the information he receives relative to this particular, determines whether to place them in the stove or greenhouse, or in the open ground; but he too frequently neglects to seek any further intelligence with regard to the humidity or dryness of the localities in which they are found, or whether they are most abundant in exposed situations, or delight in shady and retired positions, where the more immediate rays of the sun never reach them. We repeat that these points are too often overlooked or neglected by gardeners and others, and the consequence is, that a number of plants of the most contrary habits are crowded together in our stoves and greenhouses, and as all receive the same or a similar mode of treatment, a few to which that particular treatment chances to be appropriate thrive well, grow vigorously, and produce their flowers in perfection, while the majority of them are found to maintain a sickly and unhealthy appearance, and after struggling for a longer or shorter period against adverse agents, or languishing for genial and beneficial influences, ultimately die off unexpectedly, and almost imperceptibly, without any apparent cause. With no tribe of plants perhaps is this injurious and erroneous system more frequently practised, or productive of more fatal effects, than with that large and highly interesting natural order, orchidaceæ. We have, however, in a former number, entered at length into the subject of uniform and indiscriminate treatment, so far as relates to orchidaceous plants, and our present observations will refer to stove plants generally.

The first question which presents itself to our consideration, and to which we propose to restrict our remarks in the present article, is the extent to which stove plants are influenced by the immediate or mitigated agency of light upon them, and how the gardener may avail himself of what is already known relative to this subject, to cultivate any of these plants with increased facility and success. Few persons, we presume, are ignorant of the fact, that light is essential to the health and vigour, nay, to the maintenance of the vital principle itself in most plants; but whilst, with few exceptions, vegetable life would become extinct after a certain period of total seclusion from light, it is very certain that some plants require a much greater degree of the potent though subtile element than others; for, though many species seem to derive their very existence from the direct and vivid rays of the sun; there are numerous others which are incapable of enduring its more immediate influences. For instance, many of the plants now under consideration, when exposed to the full and unmitigated blaze of a meridian sun, lose all that healthy luxuriance for which they are remarkable; their foliage becomes brown and unhealthy, and even their growth is much impeded, or in some cases, wholly suspended. On the contrary, the effects of an insufficient quantity of light on those plants which require it in a greater degree, are manifested by their stems becoming elongated or drawn, and consequently weak or slender, and by the leaves assuming a white or blanched and sickly appearance; and if it is long withheld, either from natural or other causes, the plants will sooner or later absolutely perish. It becomes, therefore, highly important, that, where plants from tropical or other countries are intended or desired to be cultivated in perfection, the true nature, character, or habits of those plants, with every minute particular relative to their original habitats, should be fully ascertained; indeed, without this knowledge, though perchance a general system of treatment may happen to succeed satisfactorily with some few of the many plants subjected to it, it may be regarded rather as a mere casualty, than as evincing any correct knowledge of the habits of the plants, or furnishing any justification of the absurd and injurious system of indiscriminate treatment; and we maintain that specific and rational rules, founded upon natural habits, actual experience, or botanical affinity, should invariably guide the gardener or cultivator in his treatment of plants. Still adhering, however, to the subject of light, we proceed to give a general and brief outline of the nature of such plants as will not only endure, but absolutely require, a great degree of solar light; and also of those which succeed best where some intervening object deprives them of the more immediate rays of the sun. All such plants as are of a succulent or juicy substance,—those in which viscid or resinous matter abounds,—and those which produce a great abundance of leaves, and consequently expose a large extent of leafy surface to the atmosphere, all plants of this description cannot subsist without a comparative intensity of light, and invariably inhabit those localities where a large supply of it is communicated to them. Again, those plants which are very porous, or are liberally furnished with organs of evaporation, and those which are nearly destitute of foliage, or have a tissue in which carbon scarcely exists, are generally found in retired and shady places, and abound most in the recesses of tropical forests, where, during the growing season, the direct rays of the sun are never exercised upon them, their ingress being effectually prevented by the dense foliage of the trees by which they are surrounded and covered. These general features are alone sufficient to guide the experienced and enlightened botanist in the cultivation of any tribe of plants, or individual species, with respect to the quantity of light necessary for them; but there are few gardeners who possess a sufficient acquaintance with physiological botany, to enable them to determine, from the observation of the general appearance, or inspection of the structure of a plant, what degree of light is required to cultivate it in perfection. Therefore, this knowledge can only be obtained, either by a closer application to the study of this most interesting department of botanical science, combined with experience, or from the authentic accounts and reports of the persons who collect or discover the different species; and these, not as regards the locality wherein an individual specimen of a particular species is found, but where plants of that species are most abundant, and in the greatest perfection.

A large proportion of the plants which now adorn our stoves, and more especially those interesting objects which are classed together under the denomination of "climbing plants," are inhabitants of the dense and almost impenetrable forests of tropical countries; where, except during the dry season, scarcely a ray of solar light ever reaches them. In these, their native localities, they twine themselves around the stems and branches of the trees by which they are shaded, and grow most rapidly and vigorously, sometimes attaining a truly gigantic size. Let but these facts be contrasted with the treatment they usually receive in the stoves of this country, and the reason why they never grow to any considerable size, attain to any degree of perfection, or flourish to any extent commensurate with their natural luxuriance, will at once be obvious. In our treatment of climbing plants, we usually train them to the rafters or roof of the stove, as if we were determined to pursue the most opposite system to that which nature enjoins. In their native localities, as we have before observed, they are never subjected to the immediate influence of solar light; but in the stoves of this country, they are generally placed in a situation where they constantly receive the most powerful rays of the sun, and indeed, in that part of the house where they are most exposed to its influences. Is it not then the height of absurdity to expect that they will attain any degree of perfection in a situation so uncongenial to their natural habits? We experienced a most striking proof of the propriety of these deductions in our orchidaceous house last season, where we planted out some climbing plants in the front border, in order to cover the roof, so as to render a less degree of shading necessary. During the summer season, the plants grew and flowered in the most luxuriant and vigorous manner, and we were for some time at a loss to account for their astonishing and unusual exuberance; but it soon occurred to us, that the orchidaceous house had *constantly been shaded*, and we have not the slightest hesitation in pronouncing this to be the only reason for the extraordinary luxuriance of the plants here alluded to. And yet, with a perfect knowledge of the facts above stated relative to the natural habits of stove-climbing plants, gardeners and others will persist in keeping them as near as possible to the glass, so that they may receive as much solar light as possible. Our readers, we are sure, will unhesitatingly agree with us in condemning such a practice, as a strange inconsistency, and a palpable absurdity, and we trust we shall prove it to be too gross and palpable to be persevered in any longer. Every person who cultivates orchidaceous plants, admits that shading is absolutely necessary to their existence; but, with the plants now under consideration, which are found in precisely similar situations, not only is shading deemed unnecessary, but they are actually employed for the purpose of shading others, as if they were themselves unworthy of any regard; when, in fact, they are among the most beautiful and interesting objects known in our collections of stove plants. If it be asked how such plants are to be cultivated, if they are not trained to the rafters of the stove, we reserve our reply to a subsequent part of this article, and proceed to state that "climbers" are not the only inhabitants of our stoves which require to be sheltered or protected from the fierce and powerful rays of the summer sun. No; the great majority of those plants to which we assign a place in the stove, are found in similar situations to those we have already mentioned, and consequently require the same degree of light or shade. Sensible of the importance of these facts, we recommend every cultivator of stove plants, who wishes to bring them to a state of perfection, to collect and arrange all those species of the description and habits now under consideration into one house, and to shade that house during the glare of the day in the summer months, with some light and thin kind of canvass, similar to that which is now generally used for shading orchidaceous plants. By the adoption of this plan, we are convinced that much greater success may be ensured in the cultivation of these plants, than has hitherto been attained, and the difficulties attendant on the cultivation of climbing plants hitherto experienced, would at once be surmounted and obviated, as they might still be trained to the rafters or roof of the house, and likewise to the orchidaceous house; in either of which situations, under such a system of treatment, they would be found to improve in size, interest, and beauty, to a most surprising extent. There is, however, a portion of the objects comprised in the term "stove plants," which we have yet to notice, and which now claim a brief consideration; for though the majority of them are of the description and habits above detailed, there are some which are of a totally different nature, and owing to the deficiency of solar light experienced by them in our stoves during the winter months, not a few lose their foliage, while others actually perish, and have in some instances become lost to our collections. To cultivate these in perfection, or even to keep them alive, it is quite evident that they must neither be treated according to the directions above given, nor be kept in a house in which climbing plants are trained to the rafters or roof, which would have virtually the same effect, depriving them of necessary light. It is therefore important that they should be kept in a house by themselves, and not only so, but that the rafters and sash bars of the house should be as small and slender as possible, in order that the light may not be obstructed, and that the plants may receive the full benefit of the sun's influences. They should also be placed on stages, and thus brought as near as possible to the glass, especially during the winter season. By thus dividing the collection into two parts or sections, a due degree of light or shade may be dispensed to each, as they may respectively require; and we feel assured, that much of the success or failure in the cultivation of stove plants, depends upon attention to this important particular. Our limits will not allow us to enter further into the subject at present, by considering the application of the principle to succulent and greenhouse plants; we shall therefore embrace an early opportunity of laying before our readers a few plain and practical remarks on the influence of light on succulent and greenhouse plants, and also in future articles take into consideration the influences of atmospheric heat and moisture upon plants; and endeavour to show, that if those points were more sedulously attended to by cultivators, we might then expect our collections to rival the vegetable grandeur and floral beauties of even tropical regions, by assimilating our system of management to those rules, which the infallible economy of nature teaches us to be most congenial to the habits and constitutions of the vegetable tribes.

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NEW AND RARE PLANTS,

FIGURED IN THE LEADING PERIODICALS FOR MAY.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ).

THE INDIAN FIG TRIBE (*Cacteæ*).

Cereus pentalophus; *var.* subarticulatus. Five-winged Cereus, somewhat jointed variety. The species *pentalophus*, with its varieties, was discovered by Dr. Coulter in Mexico. The handsome variety now under notice produced its blossoms, it is believed for the first time in this country, in Mr. Mackie's valuable and extensive collection of succulents in the Norwich Nursery—the flower is exceedingly handsome, of a fine rose colour, paler and almost white in the centre, where are the yellow anthers, and rising above them is the cluster of dark-blue green styles. The stem is five-angled, as the name above imports, and furnished with rather strong prickles in clusters of six and seven. *Bot. Mag.* 3651.

THE FIGWORT TRIBE (*Scrophularineæ*).

Rehmannia Chinensis. Chinese Rehmannia. This is a pretty plant, and worthy of being extensively cultivated. It grows a foot high; the stem is weak and slightly tinged with purple, and somewhat inclined to branch at the base. The flowers are produced solitary at the axilla of the obovate leaves, and are rather handsome, large, and of a yellowish-buff colour, deeply tinged at the mouth and upper part of the tube both within and without. The whole plant, as well as the flowers, is covered with hairs. It is a native of waste and mountainous places about Pekin, where it was collected by Dr. Burge, now Professor of Botany at Kasan. Treated as a hardy greenhouse plant, it flowers well in the early summer, but the blossoms are liable to vary both in size and colour. *Bot. Mag.* 3653.

THE MEZEREUM TRIBE (*Thymelaceæ*).

Pimelia incana. Hoary Pimelia. A very neat shrub, growing about five feet high, with long slender branches, and producing clusters of pink and white flowers from the base to the extremity of the shoots. It is a native of Van Diemen's Land, and was raised by M. A. Kinnock, the gardener to Miss Copeland of Leyton, in 1834, from seeds presented by Mr. Turnbull. Succeeds, like the rest of the genus, on the front shelf of a greenhouse not too much crowded with other plants. The best soil is sandy peat, mixed with fresh loam and decayed dung. It is easily propagated in sand, or sandy soil, in spring, or early in summer. *Bot. Reg.* 24.

THE ASTER TRIBE (*Asteraceæ*).

Echinacea Dicksoni. Mr. Dickson's Echinacea. This is a fine showy perennial, with large bold flesh-coloured flowers; it grows about a foot high, and has dark-brown spindle-shaped roots, and is probably hardy enough to bear the winter in an open border; but it is best to take up the roots after flowering in the autumn, and preserve them in dry sand or mould during winter, secure from frost or damp. It flowers from the middle of August to the end of September, in any good soil mixed with a little sand and peat. A few plants require to be kept in the greenhouse, as the seeds do not ripen in the open ground. The seed should be sown in March on a nearly exhausted hotbed, and kept in pots the first season, as the plants do not flower before the second year. Seedlings should not be planted out before the middle of May. Seeds of it were imported from Mexico by G. F. Dickson, Esq. *Bot. Reg.* 27.

NOTICES OF NEW AND RARE PLANTS

IN FLOWER IN THE LEADING NURSERIES IN THE VICINITY OF LONDON.

Messrs. Henderson's, Pine Apple Place. *Entoca Wrangleana.* Of the many beautiful annuals which have been introduced to this country within the last few years, this is certainly one of the most ornamental; and its neat, compact habits, with its numerous beautiful blue flowers, render it a very interesting object. It is perfectly new, and is now flowering profusely in the greenhouse of this nursery, though it will most probably prove hardy, and would doubtless flower in greater perfection if planted in the open ground. *Azalea Danielsii.* A good specimen of this beautiful species is now in flower in the collection of the above gentlemen, and the rich and brilliant colours of its flowers have a splendid appearance amongst other species and varieties. *Cytisus rhodophne.* Messrs. Henderson possess a magnificent plant of this delightful species, which is now densely covered with its pretty yellow blossoms, and it exhales, besides, a powerful and most agreeable fragrance. Many lovely annuals and other plants, are now adorning the show-house of these gentlemen, and their combined effect is truly enchanting.

Mr. Knight's, Chelsea. *Verbena araniana.* This new and pretty species of *Verbena* is now producing its elegant purple blossoms in the greenhouse of this gentleman. It is an exceedingly interesting plant, and is excellently calculated for planting in beds or groups in the flower-garden, in company with the other elegant species of this genus. *Gesnerica faucialis* is a rare and very ornamental plant, and with the singular species to which allusion was made in our last number, and which is now called *G. reflexa*, is finely in flower at the above nursery. *Roxburghia viridis.* This is a curious, but not a beautiful stove plant, and the offensive odour of its flowers deprives it of the little interest which it would otherwise possess. It is now producing its flowers very freely at this nursery. *Passiflora Londiniana* is now flowering profusely in the stove of Mr. Knight, but it appears to require a somewhat lower temperature than that of the stove, or, at least, a more shaded situation than the roof of the house.

Messrs. Loddiges', Hackney. *Vanda teres.* This extremely rare and very valuable orchidaceous plant is now exhibiting its lovely blossoms in the collection of these gentlemen, and we are not aware of its ever having flowered in this country previously to the present time, except in the gardens of His Grace the Duke of Northumberland, at Isleworth. The petals of the flowers are of a delicate rosy lilac colour, and the labellum is of the richest purple, and beautifully streaked. There are two specimens of it now in flower at this nursery, and each plant has one flower-spike, with five or six beautiful blossoms upon it, though these latter do not all expand at the same time. To all lovers of orchidaceous plants, this beautiful species would undoubtedly be enhanced in value and interest by witnessing it in flower. *Masdevallia infracta.* This is a new, curious, and certainly an interesting little orchidaceous plant; it resembles some of the species of *Pleurothallis* in the general appearance of its foliage, which is of a very neat character, and the flowers, though neither large nor showy, are singular and pretty; they are produced rather sparingly on slender peduncles, solitary, and of a greenish yellow colour. It is only valuable for the sake of its novelty. *Epidendrum ionosma.* A new and pretty species of *Epidendrum*, with roundish pseudo-bulbs, and dark brown flowers; though these latter are very prettily marked internally, and emit a most delicious fragrance, resembling that of violets. These gentlemen also possess a new and very interesting species of *Oncidium* in flower, which is evidently distinct from any previously known. Many other excellent specimens of orchidaceous plants are now exhibiting their rich and varied beauties, particularly a splendid plant of a variety of *Dendrobium calceolaria*, which has a most attractive appearance.

Mr. Low's, Clapton. *Gompholobium polymorphum.* This is not a new plant, but it is a rather rare and extremely handsome and showy one; its brilliant crimson-coloured blossoms are even richer in hue, than those of *Chorizema ovata*, to which latter plant its flowers bear a striking resemblance, and are considerably larger. It is now beautifully in flower at this nursery, and should be in the collection of all admirers of greenhouse plants. Mr. Low possesses a new species of *Grevillea* in flower, and its delicate light pink-coloured blossoms are by no means uninteresting. A large specimen of *Loasa lateritia* is also now flowering abundantly at this nursery, and as this beautiful plant is extremely cheap, no collection, however small, should be destitute of it. *Statice arborea* still continues to produce its pretty blossoms in fine perfection at this nursery, and if plants are to be considered valuable only as they flower abundantly, this is certainly entitled to a high and distinguished character.

Messrs. Rollisons', Tooting. *Gesneria verticillata.* This is a new and very pretty species of *Gesneria*, somewhat resembling *G. Douglasii*, but essentially differing from it in its flowers being larger, and of a lighter colour; the flowers are produced very abundantly at the extremity of a stem about nine inches high, are of a light pink colour, and beautifully and liberally spotted and streaked with purple. It is an elegant species, and merits extensive notice and cultivation. *Rhododendrum guttatum.* This handsome plant is now flowering in great perfection at the above nursery, and its large white flowers, with their numerous green and brown spots, have a very showy and ornamental appearance. *Lobelia Caranillesii.* A rare and very interesting shrubby species of this genus, with an abundance of neat scarlet and yellow flowers. These gentlemen possess a very fine specimen of it now flowering most profusely in the greenhouse, in which situation it seems to thrive equally well as if kept in the stove. In the orchidaceous house, a new species of *Cymbidium* is now in flower; it is very distinct from all the other species of the genus, both in foliage and flowers, though the latter are not so pretty as those of *C. aloifolium*, and some other species, being of a yellowish green colour. Two specimens of *Peristeria Parkerii* are also now coming into flower, one of which is remarkably fine. These gentlemen have just imported a quantity of orchidaceous plants from Demerara, among which they will doubtless have some new ones.

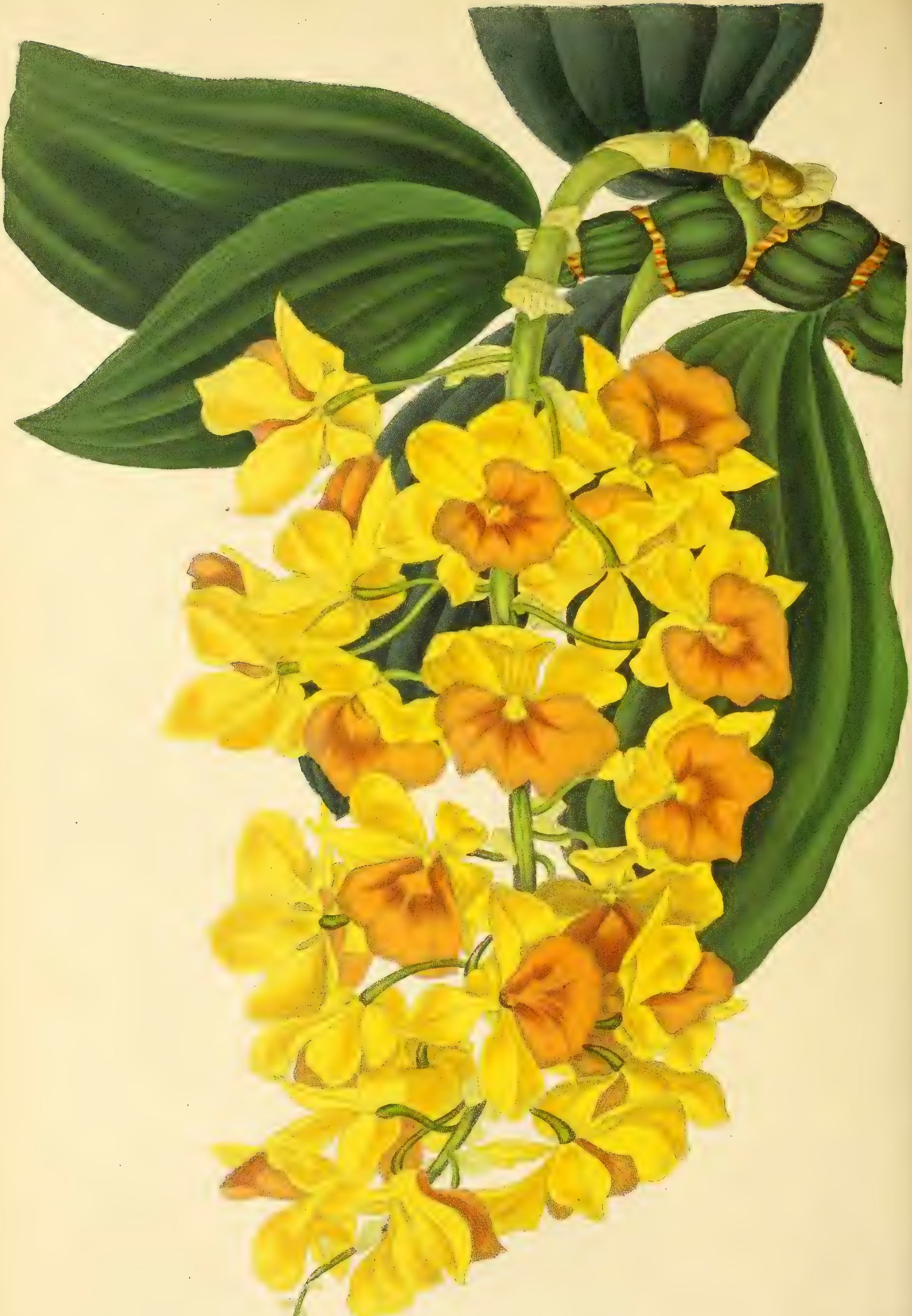
Mr. Young's, Epsom. *Azalea indica variegata.* This extremely delicate and beautiful variety is now flowering profusely in the greenhouse of this nursery, and is perhaps the most elegant and interesting (though not the most showy) of all the species and varieties of this genus at present known in our collections. No good collection should be without it, as it is a truly ornamental and valuable plant. *Mentzelia stipitate.* A rather new and very ornamental stove plant, which produces its showy orange-coloured blossoms very numerously, and in almost constant succession, as it has now been flowering at this nursery for several months, and appears likely to continue so doing. It may probably prove a greenhouse species, but has hitherto been kept in the stove, where, though it flowers so abundantly, it does not grow very freely. Mr. Young possesses some splendid specimens of *Clematis cœrulea*, and *Sieboldii*, now coming into flower; one plant of the former, especially, is cultivated to greater perfection than we ever before witnessed it, and the flowers are of a very large size, and a most brilliant colour. *Mucuna pruriens.* Several plants of this singular species are now in flower at this nursery, and though an old, it is a valuable and profuse-flowering stove-climbing plant.

OPERATIONS FOR JUNE.

Any *Orchidaceous plants* that are now in flower may be removed with safety to a cooler house, or, if desired, to a drawing-room, where they will continue flowering much longer than if they were allowed to remain in the orchidaceous house. The last-mentioned situation is admirably adapted for this temporary translation, as, besides being most delightful ornaments to the apartment, they will be effectually shaded from the rays of the sun,—an object so very desirable at this season. They should be taken back to the orchidaceous house as soon as they have ceased flowering, that their further growth may not be impeded. Particular attention is requisite to shading these plants at this season, and the sun should never be allowed to shine directly upon them, neither should they be shaded in dull weather, or when the sun is naturally obscured. *Stove plants* should be most assiduously watched at this season, and never suffered to droop for want of water, otherwise they will be materially injured. Powerfully syringe all such plants as will bear it in the evening of each day, for by this practice, if the house be immediately closed, insects, however numerous, will soon be destroyed; and where there are none, it will prevent their appearance, as most of those which infest stove plants cannot endure a great degree of humid heat. Every other practicable means should be resorted to for destroying them at this time, or they will most rapidly increase during the summer season. *Bulbs* that have now ceased blooming should have the quantity of water applied to them gradually diminished, and ultimately wholly withheld.

Greenhouse plants, if they were not taken to the open air last month, may now be removed; they should be placed in a sheltered situation, and one in which they will also be slightly shaded, but not beneath trees. We would recommend that only the common and inferior species be treated in this manner, and the more valuable sorts retained in the greenhouse. In either case judicious watering is the principal requisite at this season, and those which are placed in the open air should have either coal ashes or some more solid materials placed beneath the pots, otherwise the holes at the bottom will become choked with soil, and the water will be retained too long in the pots, to the great injury of the plants. *Hydrangeas* require a more than ordinary supply of water at this season, and should receive it twice or thrice in each day. *Balsams* should be allowed an abundance of pot room and light, and kept in a slightly humid heat as near as possible to the glass. If they are necessarily placed in a situation where they can only receive light from one side, they should occasionally be turned, that the whole plant may enjoy an equal degree of light, or they will become deformed; and they must especially be placed at a sufficient distance from each other to prevent similar bad results. Plants of *Cereus speciosissimus*, *Jenkinsonii*, &c., that were brought into flower early in the season, and have now matured their young shoots, should be removed to an exposed situation in the open air, which will cause them to flower in much greater perfection in the ensuing year. Greenhouse plants of all descriptions may now be propagated abundantly from cuttings.

The *flower garden* is now daily becoming more attractive, and, besides the ordinary routine of cleaning the beds, borders, &c., every plant will require more or less attention. All blossoms should be cut off as soon as they begin to decay, unless seed is required; which will induce some of the sorts to flower again in the autumn. Annuals and other plants must be timely staked and supported, and *hollyhocks* especially should be staked as soon as the flower-stems commence growing. *Chrysanthemums* may now be propagated either by cuttings or layers, the former of which methods is the most suitable at this season. They will strike freely if placed numerously in pots in a sandy soil, and kept in a slightly humid bottom heat. *China roses* of all kinds may also now be multiplied by cuttings of the half-ripened wood, merely requiring the protection of a hand-glass and shade. To effect the latter purpose, they should not be planted in a border with a northern aspect, or one that is permanently naturally shaded, but in a southern situation, and shaded by artificial and mutable means, such as by placing a mat over the hand-glass in the heat of the day. *Mesembryanthemums* may now be planted out in an open border with a southern aspect, and a rather poor soil, and they will flower most abundantly. A few hardy annuals may now be sown in the open ground, where they are intended to flower, which they will do about the month of September. Dahlias must be planted out early in this month, if this has not been previously effected, and greenhouse or half-hardy plants that are required for the borders should be placed out at the same time.



Dendrobium densiflorum.

DENDROBIUM DENSIFLORUM.

(DENSE-FLOWERED DENDROBIUM).

CLASS.	ORDER.
GYNANDRIA.	MONANDRIA.

NATURAL ORDER.
ORCHIDACÆ.

Generic Character.—See vol. iii., p. 77.

Specific Character.—*Stems* jointed, swelling at the joints, pendulous, leafy at the summit. *Leaves* oblong, acute, nervose. *Racemes* lateral, many-flowered, much longer than the leaves, conical. *Bracteas* situated at the base of the pedicels, plicate, recurved. *Sepals* spreading, ovate, obtuse. *Petals* similar, but larger. *Labellum* inclining to a square shape, clawed, serrated, blunt.

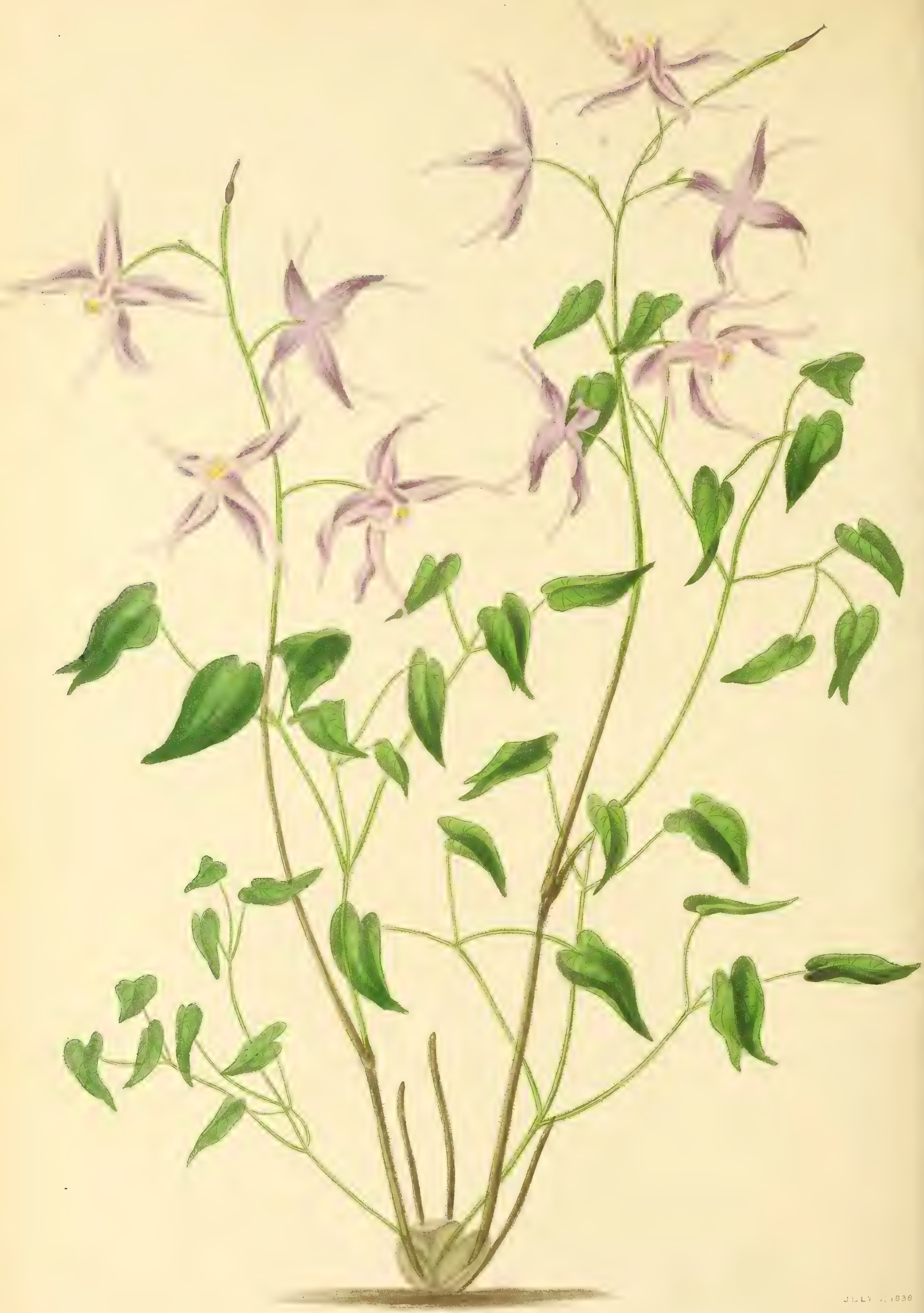
The specimen of this beautiful species from which our figure was taken, was imported with numerous others by His Grace the Duke of Devonshire, from the Khoseea hills, where it was found by Mr. John Gibson, his Grace's collector, growing upon trees, in shady, moist woods, at an elevation of about three thousand feet. It is also, and more plentifully, found on the Nepal hills, from whence it was first sent to this country by the indefatigable Dr. Wallich.

Plants of this showy species, when grown in the artificial climate of our hot-houses, seldom produce their flowers, which is chiefly owing to the inattention of cultivators to the process of drying them, and also of preventing them from flowering at their favourite season; for, with due regard to these particulars, we have succeeded in flowering, most profusely, no less than six plants of this species in the collection at Chatsworth.

It is well known that Orchidaceæ, like other plants, require a regular course of seasons to cultivate them successfully; or in other words, they require a season of growth, a season of rest, and a season for flowering, all of which should coincide in order and duration with the corresponding seasons of those parts of the globe which they so profusely inhabit. The extensive and truly valuable genus, to which the subject of our present notice belongs, should especially be subjected to a change of treatment assimilating as much as possible to that above-mentioned, for without this, they will seldom flower at all, and never in perfection.

All, or the greater number of the species of *Dendrobium*, flower in India in the hot or dry season, which is succeeded by the rainy season, when they make their shoots, and during the cold or winter season, they have a period of repose; they thus enjoy three seasons, while in this country we have four, the autumnal quarter not being known there. The different seasons of India being thus so well known, it is by no means difficult to imitate them in our hothouses, and, by attending to these simple rules, we should be enabled to flower the various species of *Dendrobium*, more abundantly than those of any other genus of Orchidaceæ; besides which, we might easily induce them to flower in this country at any season of the year.

This species may be propagated by detaching one of the stems, while in a dormant state, taking care not to injure the roots, and potting it carefully into heath soil, well drained; the stem will require supporting with a slender stake, and the pot containing it should be plunged in a gentle bottom heat, where it will speedily produce new shoots.



JULY 1. 1838

Epimedium violaceum.

EPIMEDIUM VIOLACEUM.

(VIOLET-FLOWERED BARREN-WORT.)

CLASS.
TETRANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
BERBERIDEÆ.

Generic Character.—*Calyx* four-leaved, caducous, opposite the petals. *Nectaries* four, cup-shaped, incumbent on the petals. *Pod* one-celled, two-valved, many-seeded.—*Loudon's Encyclopædia of Plants.*

Specific Character.—*Plant* an herbaceous perennial. *Leaves* twice ternate, heart-shaped, ciliated at the margins, either radical, on short petioles, or springing from the flower-stalk. *Flower-stalk* hairy, longer than the leaf-stalk. *Flowers* of a purplish violet colour, on long peduncles.

There is something so peculiarly graceful and interesting in the habits of this little plant, and the flowers are so extremely delicate and elegant, that it will doubtless soon become a favourite with persons of taste, and obtain the extended circulation it so justly merits. The genus of which this pretty plant forms a new feature, contains very few known species, and was founded originally on the well-known *E. alpinum*, which, though frequently found growing wild in our woods, is considered a doubtful native, and is much admired and extensively cultivated as a border plant. We are unable to state with certainty whether the present species will prove so hardy as that just alluded to, as our figure was taken from a newly imported plant, which flowered in the greenhouse; but we have little doubt that it will prove sufficiently hardy to endure the open air in this country, particularly as so many of the plants that have been introduced from the same quarter have succeeded so well in the open ground in the collections in the neighbourhood of London.

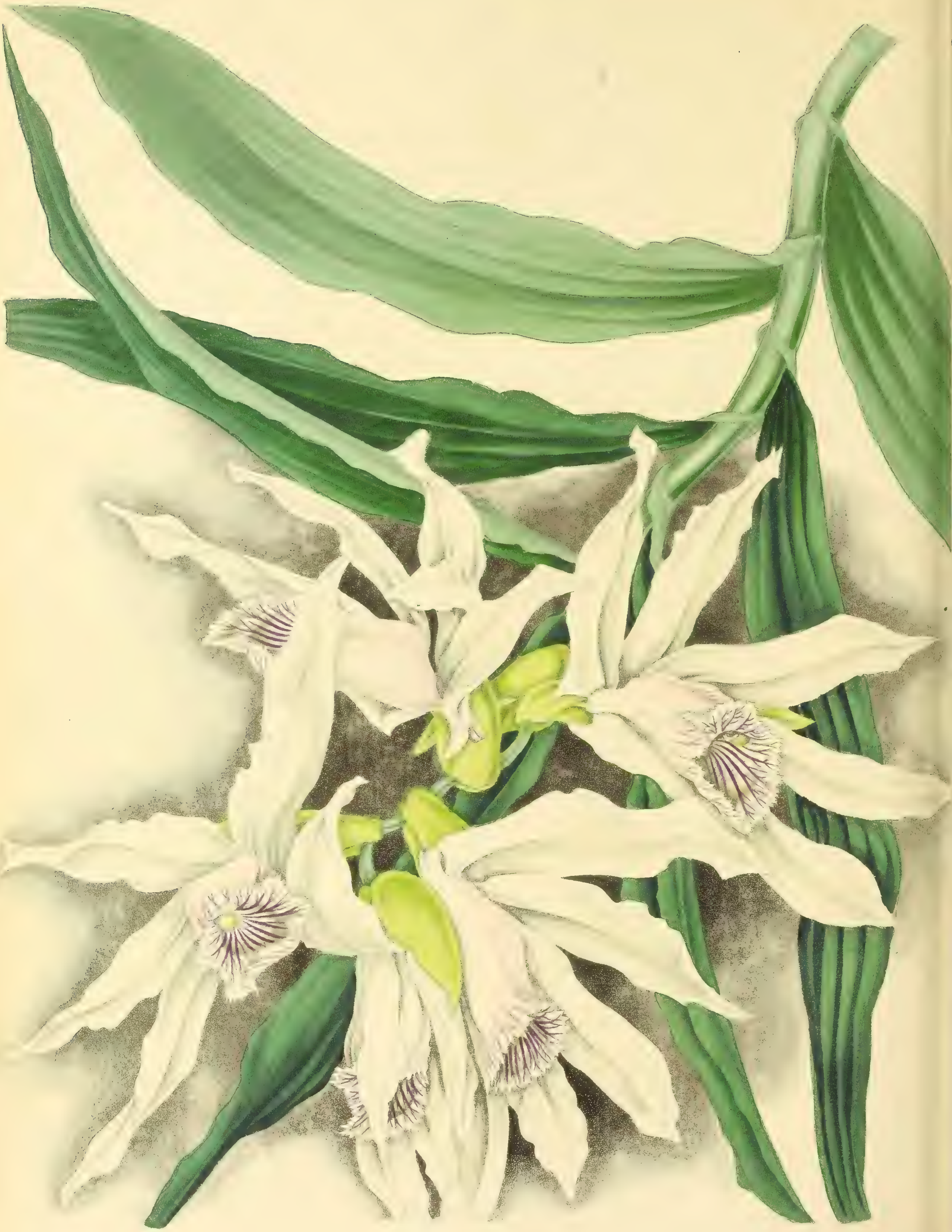
It may be cultivated with the greatest ease by being planted or potted in a loamy soil. If kept in a pot, it should be watered with great caution after the leaves have withered till they recommence growing, when it must have a more liberal supply; or, if it be planted in the open ground, it will be advisable to cover the roots during winter with some dry litter, taking care to remove it by degrees as soon as the leaves appear, which they will do early in the spring.

By dividing the roots, an increase may be obtained, but it is more than probable that it will ripen its seeds abundantly, which may be sown as soon as they are sufficiently matured, in pans or flats, and kept in a gentle heat till they have vegetated, when they may be transplanted into pots or into the open ground.

This is one of the many beautiful plants for which this country is indebted to the exertions of Dr. Van Siebold in Japan, from whence it was brought to the European continent, and from thence the specimen from which our drawing was obtained was received by Messrs. Low and Co., of the Clapton nursery, in the early part of the present year. We believe its usual time of flowering to be the months of April and May.

The derivation of the generic name is unknown, it having been applied to the genus by *Linnæus*, some suppose because it was found growing in Media.

The specific name refers to the colour of the flowers, which, in the individual figured, would be of much darker violet, had the plant been grown in the open ground.



JULY 1, 1838

Phajus albus.

PHAIUS ALBUS.

(WHITE-FLOWERED PHAIUS.)

CLASS.	ORDER.
GYNANDRIA.	MONANDRIA.

NATURAL ORDER.

ORCHIDACEÆ.

GENERIC CHARACTER.—*Sepals* and *petals* nearly equal, spreading, free. *Labellum* frequently cucullate, adhering to the base of the column, spurred, entire or three-lobed. *Column* erect, attached to the ovaries, half-cylindrical, marginate, elongate. *Anthers* eight-celled. *Pollen masses* eight, nearly equal.

SPECIFIC CHARACTER.—*Plant* caulescent. *Leaves* oblong, lanceolate, acute, glaucous beneath. *Racemes* terminal, three to five-flowered, shorter than the leaves. *Sepals* and *petals* oblong-lanceolate, acute, nearly equal. *Labellum* oblong, cucullate, toothed, beautifully streaked with purple.

THIS may be said to be one of the most delicate, as well as the most lovely, of Orchidaceous plants, the flowers being large and pure white, pencilled in the most exquisite manner with purple on the lip; when in flower, it has a strikingly beautiful appearance, particularly as the flowers are produced at the extremities of the shoots when these are in full leaf.

The habit of this plant is very remarkable, and is certainly not an uninteresting feature in its character. At one season of the year, it is seen in a leafless and torpid state, its stems having the appearance of dried and lifeless branches; at another period of its growth, it exhibits its finely pointed and glaucous leaves in a state of the most lively verdure; and subsequently the flowers are produced, which vie in beauty with the choicest of Nature's productions. After flowering, the stems will speedily become matured, and shed their foliage, when the plant will again assume the appearance of a decayed piece of wood. What can be more interesting than to watch Nature in all her progressive stages, particularly in those productions in which the changes are so obvious and regular? and who, upon observing the perfect order which prevails throughout her whole varied and extensive territory, and gazing on the delicate texture and admirable structure and markings of this lovely flower, but will acknowledge that

"Nature is but a name for an effect
Whose cause is God.—Not a flower
But shows some touch, in freckle, streak, or stain,
Of his unrivall'd pencil. He inspires
Their odours, and imparts their hues,
And bathes their eyes with nectar, and includes,
In grains as countless as the sea-side sands,
The forms with which he sprinkles all the earth.
Happy who walks with him! whom, what he finds
Of flavour, or of scent, in fruit or flower,
Or what he views of beautiful or grand
In nature, from the broad majestic oak
To the green blade that twinkles in the sun,
Prompts with remembrance of a *present God!*"

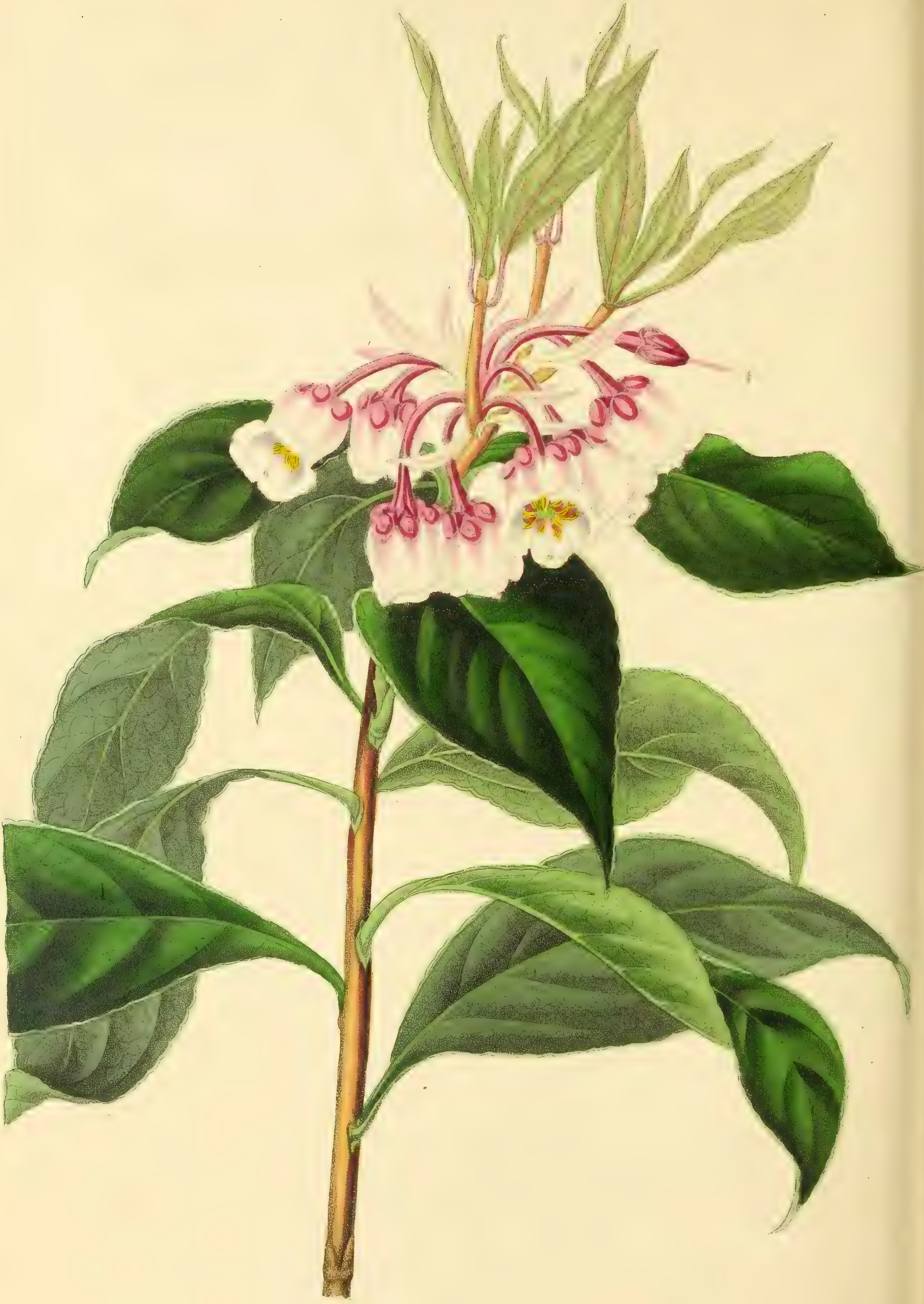
This plant will be found very difficult to cultivate, but, for want of the necessary room, we are unable at present to furnish the particulars of our treatment of it at Chatsworth, in which we have experienced the most perfect and gratifying success. We shall therefore revert to this subject at an early opportunity.

The plant which furnished the sample for the present drawing, flowered beautifully in the Orchidaceous-house at Chatsworth, in the early part of the month of May.

It is a native of the mountainous districts of Nepal and Silhet, and was imported from the latter place, in the year 1837, by his Grace the Duke of Devonshire.

It was found by Mr. John Gibson, his Grace's collector, growing upon trees, in shady, damp woods, on the Khoseea hills, at an elevation of from two thousand to three thousand five hundred feet, where it blossoms during the rainy season, in the greatest profusion; and it would be difficult to conceive a more enchanting sight than its clusters of elegant blossoms, contrasted with the delicate pale green of the foliage, present to the eye of the traveller; enlivening the forest scenery with their charms, and investing the trees with a borrowed beauty of no ordinary character.

The genus *Phaius* is distinguished from *Bletia* by the labellum being uniformly connate with the base of the column, and spurred; while the labellum in *Bletia* is constantly articulate with the column, and never spurred.



JULY 1 18

Enkianthus reticulatus.

ENKIANTHUS RETICULATUS.

(NETTED-LEAVED ENKIANTHUS.)

CLASS.
DECANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
ERICEÆ.

GENERIC CHARACTER.—*Calyx* five-cleft, furnished with coloured bracteas. *Corolla* campanulate, with a five-cleft limb, and with five pits at the base of the tube. *Stamens* ten, inserted in the base of the corolla; filaments toothed, pilose at the apex. *Style* filiform. *Berry* five-celled, many-seeded. —*Don's System of Gardening and Botany.*

SPECIFIC CHARACTER.—*Plant* shrubby. *Leaves* oblong, acute, reticulate, on short petioles. *Corolla* of a pale blush colour; limb five-cleft, segments reflexed. *Nectary* five-celled, containing a melliferous secretion.

FOR an opportunity of furnishing our readers with the accompanying figure of this extremely beautiful plant, we are obliged to Messrs. Lucombe, Pince, and Co., of the Exeter Nursery, in whose conservatory it flowered during the whole of last December and January, and from whence our drawing was taken in a very superior manner, by Miss Flood, an accomplished young lady of that city.

There is an extraordinary neatness and elegance in the structure of its flowers, which is greatly heightened by the brilliant gem-like appearance of the nectary, (copiously filled with honey,) and which causes it to be much admired by all cultivators of rare and beautiful plants. In its native country, likewise, it is held in the highest esteem, amounting even to veneration; branches of it when in flower (which happens at the commencement of their year) being selected and placed in the finest porcelain vases in their temples, and in the houses of their principal mandarins.

Much confusion appears to have existed amongst botanists, and in botanical publications, relative to this species, and it has been most strangely confounded with *E. quinqueflorus;* from which, however, it very widely differs in many material points, and perhaps in no particular is the difference more conspicuous than in the size and shape of the leaves. In this respect it will be seen that the foliage of the plant here figured is unusually large; and hence the gentlemen before alluded to received it as a variety of the original species, but this is now considered to be entirely owing to the favourable circumstances under which it has been cultivated.

Although an old, and comparatively well-known plant, it is by no means common in the collections of this country; and this is not easily to be accounted for, as few conservatory plants can vie with it either in the beauty of its foliage or its flowers. It succeeds best when planted out in the border of a greenhouse or conservatory, in a compost of heath-mould and loam, mixed with a due proportion of sand, and placed in an airy part of the house. In such a situation it will grow to much greater perfection than if kept in a pot, and when in flower, nothing can be more attractive than its appearance.

It is considered rather difficult to propagate, but cuttings of the young wood will grow tolerably well if planted in a very sandy soil and carefully preserved from superfluous moisture.

This species is a native of China, and produces its flowers in the greenhouses and conservatories of this country in the months of January and February.

A BRIEF OUTLINE OF THE MOST IMPORTANT FEATURES IN THE CULTIVATION AND MANAGEMENT OF THE GENUS MESEMBRYANTHEMUM.

Whenever a subject of interest presents itself to our consideration, which we have never before had occasion to notice in former volumes of our Magazine, it affords us much pleasure to be able to offer a few remarks upon it, and our attention shall now be directed to the extremely beautiful, though little cultivated genus, *Mesembryanthemum.* There are no less than three hundred distinct species and varieties of this genus mentioned in Loudon's "Hortus Britannicus," and we possess a great number of them in our collection at Chatsworth, of all which we are not acquainted with a single species or variety that has not some peculiar claims to beauty and interest. Producing annually an immense number of flowers of the most brilliant colours, and yet of the most extensive variety, having thick, fleshy, foliage, of a most singular and interesting character, and being besides most easily cultivated, this beautiful genus appears to us to possess charms and merits of a more than ordinary nature, and we are at a loss to imagine how many cultivators can willingly neglect, or wilfully despise, a genus of plants which certainly deserves to rank amongst the most pleasing and delightful of nature's productions.

In another part of the present number, a few remarks will be found on the propriety of affording these plants a great degree of solar light; and though this may safely be said to be one of the most important features in their cultivation, there are other particulars which require equal attention and consideration. It is observed, in the article just alluded to, that light exercises a more important influence upon these plants relative to the production of flowers and the colours of those flowers, than either sterility of soil, or scarcity of water; but we by no means wish to deny that these latter assist much, in conjunction with light, in forming and developing a great number of rich-coloured flowers; on the contrary, we are disposed to award them individually and unitedly a due share of the efficacy, still, however, maintaining, that light is the principal and most powerful agent.

Notwithstanding that the popular opinion inclines to the use of a light and partially barren soil for cultivating these plants, we find some of the most recent and eminent writers on the subject, and one in particular, whose success in the cultivation of this genus is almost unrivalled, recommend a rich, light loam, with a slight mixture of very rotten dung, as a proper and suitable compost for these plants. In this respect, however, we differ from the talented author just referred to, as we consider that a trifling admixture of lime-rubbish with the soil, or a good proportion of river or white sand, is very necessary, if not essential, to cultivate, or at least to flower, these plants in a superior manner. With respect to the quantity of water which they require, we are averse to administering to them too large a supply at any time, but more especially in the winter; and we are of opinion, that so long as they are kept from withering or shrivelling, they cannot be too sparingly watered at all seasons; an attention to which point would doubtless contribute to increase the number of flowers.

These plants may all (except a few species which are of only annual duration) be propagated by cuttings, which should be taken off from the extremities of the young shoots about the month of May, or from that time till the month of August, and, like those of most other succulent plants, they will require placing in a shady, dry situation for a few days, till they begin to shrivel, when they may be planted numerously into shallow pots, in a very light sandy soil, with an abundance of drainage materials in the bottom of the pot. They should be placed in a slight, dry heat, and carefully shaded from the sun till they have struck root, watering them occasionally, but with caution, as they are very liable to rot when any superfluous moisture is collected about them. When struck, they may be potted singly into very small pots, in a compost of one-half light loam, one-fourth well-decayed manure, or leaf soil, and one-fourth, or less, of lime rubbish broken fine, and sand, placing them in the coolest part of the succulent-house, (or in the green-house, where a house is not exclusively devoted to succulents,) watering them sparingly, and keeping them as close as possible to the glass, so as to receive the full benefit of solar light. When the roots appear to have filled the pots, they must be repotted into pots of a larger size, in a similar compost; and during the whole period of their growth, it is important that they should not be allowed too much pot-room, as they usually become straggling and unsightly if they are stimulated or suffered to become too large.

Plants raised during the summer of one year, may be planted out into the open ground in the spring of the ensuing season, or they may be allowed to remain till they are two years old, before they are thus treated; for they invariably flower better when they are well established. The situation chosen for them should be a border with a southern aspect, as they delight in receiving the full influences of the sun, and indeed, their flowers will seldom expand unless the sun is shining on them; the border should be slightly elevated above the surrounding surface, for the purpose of preserving the plants from superfluous moisture; and the sub-soil should if possible, be firm and hard. We are accustomed to plant out a number of these plants in a small border in the front of an ornamental stove, and in this situation, being fully exposed to the sun, and on a rather rocky sub-soil, they flower most beautifully and profusely, the soil of the border being very similar to that before recommended, but with a less proportion of sand and lime rubbish. A rockery, with a southern aspect, is likewise a most excellent situation for them, in the crevices of which they may be inserted in a soil introduced for the purpose, and they will there be effectually preserved from any superfluity of moisture. But they will seldom be found capable of enduring the open air throughout the whole season in this country, and therefore it is necessary to remove them from the ground in the autumnal months, and place them in pots of a sufficient size to be kept through the winter in the greenhouse, or succulent-house, with very little water, and a temperature just high enough to exclude frost. They should never be pruned, for when they become old and straggling it is better to throw them away at once, having previously raised a stock of young plants to supply their place.

The annual species, such as *M. crystallinum*, and others, require very little attention, as it is only necessary to collect the seed as soon as it is ripe, and sow it in a very light soil, keeping it in an airy part of the succulent-house till it vegetates, and afterwards potting the young plants singly into small pots, and treating them according to the preceding directions with regard to soil, situation, and water.

Thus treated, there are few plants which reward the cultivator with a greater profusion of showy blossoms than the numerous species and varieties of this genus, and they are equally within the reach of the nobleman and the amateur, and may be successfully cultivated in the garden of either, provided due attention is given to the subjects of light, soil, and watering, as here detailed.

REMARKS ON THE INFLUENCE OF CLIMATE ON PLANTS.

ARTICLE II.—THE INFLUENCE OF LIGHT—(*continued*).

To the inquiring gardener or cultivator of plants, no subject is more replete with interest, or more calculated to afford him information and instruction relative to the principles on which these charming productions of nature should be treated or managed, than an investigation into the peculiar effects which the various atmospheric influences produce upon them, with a view to his guidance in the regulation and modification of those influences in practical cultivation. If we reflect upon the fact, that, in the absence of a due degree of light and heat, and of a free and constant supply of the more immediate aerial elements, plants and vegetables would cease to exist, we shall at once perceive, that certain proportions of each of these atmospheric principles are indispensable to the cultivation and reproduction of every description of plants. But, if we pursue our inquiries, and endeavour to ascertain the particular degree of these elementary constituents which each tribe of plants or individual species requires, we shall speedily discover that it is a question too intricate for the human mind to solve, a subject almost too impalpable and too complicated for human observation, and indeed it is one of which the most eminent individuals have, after devoting their whole lives to its consideration, been obliged to confess that they had learnt comparatively nothing. It is sufficient, then, for each succeeding age to know something more of this subject than their predecessors, and to approach a little nearer the goal which all have in view, viz. a perfect knowledge of the nature, manner, and extent of atmospheric agency in plants. It would doubtless be highly interesting to many of our intelligent readers, were we, in resuming the consideration of the subject of the present article, to treat of it in a chemical point of view; but as we seldom introduce to our pages any remarks of this nature, which have not a direct practical tendency, we do not intend to deviate from our usual course in this instance; and as we have, in a former article, shown the influence of light on stove plants, accompanying our remarks with useful directions for their general management in this respect, we now propose to extend our observations to those singular objects which are usually termed "succulent plants;" but, as it will not be convenient here to detail the numerous genera which are comprised in this term, we shall select the tribe *Cactæ*, and the genera *Mesembryanthemum* and *Agave*, as types of the rest, and severally consider these with reference to the subject of light.

We have previously stated, that plants which are of a succulent or juicy substance require a great degree of light, and are usually found growing in very exposed situations. The numerous species of *Cactæ* which are now cultivated in our collections are nearly all met with on dry open plains, and seem to be provided by nature for the sustenance of man and animals in those districts where other kinds of vegetables could not exist, and where neither food nor water can be procured from any other source. It is not a little remarkable, that plants of a consistence so watery as those now under consideration, should be found in such localities as we have above mentioned, and be able to endure the scorching rays of a meridian sun with perfect impunity; but this may be accounted for by their having an exceedingly limited number of pores or respiratory organs, so that while they are furnished with organs of absorption to collect all the moisture which can possibly be obtained from the parched soil, they are thus enabled to retain it to such an extent as constantly to preserve them in full health and vigour. M. de Candolle states that various species of *Opuntia* are planted by the natives of the surrounding country in the crevices of the old lavas at the base of Mount Ætna, in which situations they flourish in such extraordinary luxuriance, as eventually to break up the lava into mere fragments, and likewise produce an immense quantity of fruit; a striking proof of their capability of sustaining a great intensity of drought and solar light. Besides the above, it is well known that *Cactæ* grow naturally in those localities where they are constantly exposed to the most powerful influences of a tropical or equinoctial sun; and we may from thence reasonably infer, that unless our treatment of them in this respect is assimilated as much as possible to that which they receive in their natural situations, no satisfactory results will ensue from it. Most good cultivators of *Cactæ* have the whole of their succulent plants collected together in one house; and this system is productive of many important advantages; for, when kept along with a collection of stove plants in the stove, independently of the degree of heat and moisture being injurious to them, they cannot be supplied with a sufficient quantity of light. A few years ago, we had the whole of our collection of succulent plants placed in the stove; the consequence of which was, that owing in a great measure to the deficiency of solar light, as well as to the superabundance of moisture, we lost many of our most valuable species, particularly of *Stapelia*, which in some instances perished in a few days without evincing any previous signs of decay. We therefore found it necessary to remove them into a house where light was liberally afforded, and since then we have had the gratification of seeing them thrive most luxuriantly, and flower in a high state of perfection.

From the accounts of travellers, we learn that many species of *Cactæ* produce a great abundance of fruit in their wild and native state; this, we presume, is entirely attributable to the intensity of solar light with which they are naturally supplied; but that the plants which are cultivated in British collections produce little or no fruit, is a fact of which every individual who is at all acquainted with them must be aware. We do not say that *Cactæ* are cultivated, or are worth cultivating in this country, solely for their fruit, but we would remind our readers that the means which produce fruit, will previously develop the finest flowers, and that these plants are cultivated not only for the singularity of their appearance, but also for the striking beauty of their flowers. To obtain then a great abundance of flowers, of rich and splendid colours, no mode of treatment, however plausible and suitable in other respects, can be made to supply a deficiency in solar light, and we consider this fact to be the prominent and most important feature in the cultivation of *Cactæ*.

In the collection of a private gentleman in the vicinity of London, we witnessed, a few months since, some large specimens of *Opuntia vulgaris*, which had for several years been planted in an open border, and trained to the front wall of a greenhouse; in this situation they produce annually an almost innumerable quantity of blossoms, and these are succeeded by an equally profuse supply of fruit. Now it is well known that this species, when treated as a stove plant, certainly attains to a great size, but seldom if ever, develops its flowers; so that this deficiency cannot be attributed to a lack of heat, nor can it be said to be caused by an excessive degree of it, for its native country, where its fruit forms a staple article of food, is situated in the tropical parts of America. Therefore, we can only account for the above unusual instance of this plant flowering in such profusion by the circumstance of its being freely exposed to the influence of solar light; and from this, as well as numerous other similar cases which have fallen beneath our notice, we are convinced that the prevailing error in the cultivation of these plants, is not allowing them a sufficient quantity of the important element now under consideration, the consequence of which is, that they generally flower indifferently, and frequently not at all. In a few isolated instances this remark may not perhaps appear to apply, as some gardeners certainly cultivate these plants to an extraordinary degree of perfection; but this excellence is only attained with a few species, and even with these, is solely attributable to the plants being periodically exposed to the sun's influences, and not, as is generally supposed, to the variation of temperature. We would therefore suggest, as a practical inference from these facts, that these plants be kept in a house where they can constantly receive the unobscured and unmitigated influences of the sun—that they be placed on a stage as near as possible to the glass—and that nothing be suffered to obstruct or counteract the direct and immediate rays of solar light. These remarks refer to the whole tribe of *Cactæ*, but there are some species which will bear exposing to the open air during certain periods of the year; such, for instance, as *Cereus speciosissimus*, *speciosus*, *Jenkinsonii*, and others of similar habits, and if these are annually placed in an exposed situation in the open air, after they have ceased growing, they will be found to flower much more abundantly, and in far greater perfection, in the succeeding year. Throughout the whole season, and at all stages of the growth, they should constantly receive as much solar light as can be dispensed to them, except during the short period they continue in flower, when they may be placed at a farther distance from the glass, to preserve them in flower for a greater length of time. The variation of temperature and moisture which these plants require, will form the subject of future articles, and we now proceed to offer a few observations on the effect of light on the numerous species of *Mesembryanthemum.*

The extensive and interesting genus just named, with the exception of the genus *Erica*, contains a greater number of beautiful species than any other with which we are acquainted, and there is not an individual species of it but is more or less ornamental. It is generally believed, that if these plants are placed in a poor and sterile soil, they may be induced to flower more profusely, and that the flowers will be finer and of better colours. To a limited extent this notion is correct, but it is a great error to suppose that this treatment will of itself be sufficient to produce the effect above mentioned. It is also imagined, that, by withholding water from these plants for a time, their flowering may be facilitated, and the flowers rendered finer and more abundant; this is likewise to a great extent an equally erroneous hypothesis, if the success be attributed to this treatment alone, as may be sufficiently proved by placing the various species of this genus in a sterile soil, administering water very sparingly or wholly withholding it for a time, and keeping them in a shaded or gloomy situation where the rays of the sun can never reach them; the result of which will be, that they will either produce few and insignificant flowers, or be altogether destitute of them. But if, instead of being kept in this unfavourable position, they are placed in an open exposed situation, where they can receive a great degree of solar light, they will speedily produce a most brilliant display of flowers, and these will continue expanding for a great length of time. It therefore plainly appears that it is the *influence of light* which causes these plants to flower so profusely, and not the nature of the soil or the quantity of water administered; though these latter doubtless contribute in some degree to produce the above desirable effects. Indeed, this must be abundantly evident to every intelligent cultivator who has been accustomed to place these plants in the open air; for it is irrational to suppose that poverty of soil or scarcity of water alone would cause them to flower so freely. *Mesembryanthemums*, then, like most other succulent plants, require a great intensity of solar light to enable them to produce their flowers in perfection; and whether they are kept in the succulent house, or placed in the open air, this important particular should be duly and properly attended to, otherwise no success will be attained. During the summer months, however, many of the species will flower better in the open air than if kept in the succulent house, as in the former situation they will receive a much greater degree of light, by being more fully exposed to the sun's genial and beneficial influences. With a few observations on the genus *Agave*, we shall for the present dismiss this subject.

The *Agave Americana*, or American Aloe, is a plant that is cultivated in our collections solely for the beauty and singularity of its large and handsome fleshy leaves, as it is very rarely that we succeed in inducing it to flower in this country. This latter defect is commonly attributed to the supposed circumstance of this plant only flowering once in a hundred years; but this fallacy has been so frequently disproved and confuted, that it is unnecessary here to advert to it. In its native country, (the tropical parts of America,) it generally arrives at maturity, and produces its flowers, within a term of ten years; but in the collections of this country it seldom flowers within the period popularly assigned to it, or at least, within seventy years, a circumstance entirely owing to the deficiency of heat, but more especially, of light, with which it is supplied. It is true that most cultivators expose their plants of this species to the open air during the summer months, but throughout the long winter season, they are usually placed in a dark conservatory or orangery, frequently thirty or forty feet from the glass, and shaded besides by other plants. We therefore maintain, that if these plants were constantly kept in an exposed situation, it would not be such an extremely rare occurrence to witness them in flower as it now is. Many cultivators would probably prefer keeping a remarkably fine specimen of this plant in a dormant state, to adopting any measures for inducing it to flower, as it is well known that the plant perishes immediately after it has ceased flowering. But this we may venture to denounce as a crude and illiberal notion, for it is notorious that this plant may be propagated with extreme facility from offsets, and by this means an abundant succession of young plants may be maintained. As the loss of a fine specimen might thus speedily be supplied with others equally fine, the gratification of having this plant in flower, would more than compensate for the destruction of the specimen; and we entreat the attention of cultivators to the importance of keeping this plant constantly exposed to the full influence of solar light, that our collections may no longer be deprived of the extraordinary beauty of the flowers of this singular species.

In conclusion, we would just remark, that the principles we have thus laid down with regard to the necessity and importance of affording certain plants a great degree of light, are equally applicable to the whole of the genera and species comprised in the term "succulent plants;" and that where it is wished to flower any species of this beautiful tribe in perfection, (which is doubtless the chief end and object of every cultivator,) this desirable purpose may be fully attained by due attention to the subject of this article; but, if this is neglected, and these plants are kept in a house where a sufficient degree of light is not supplied, nothing but failure and disappointment can be expected to result from such an injudicious and injurious system of treatment.

FLOWER-GARDENS AND THEIR ORNAMENTS.

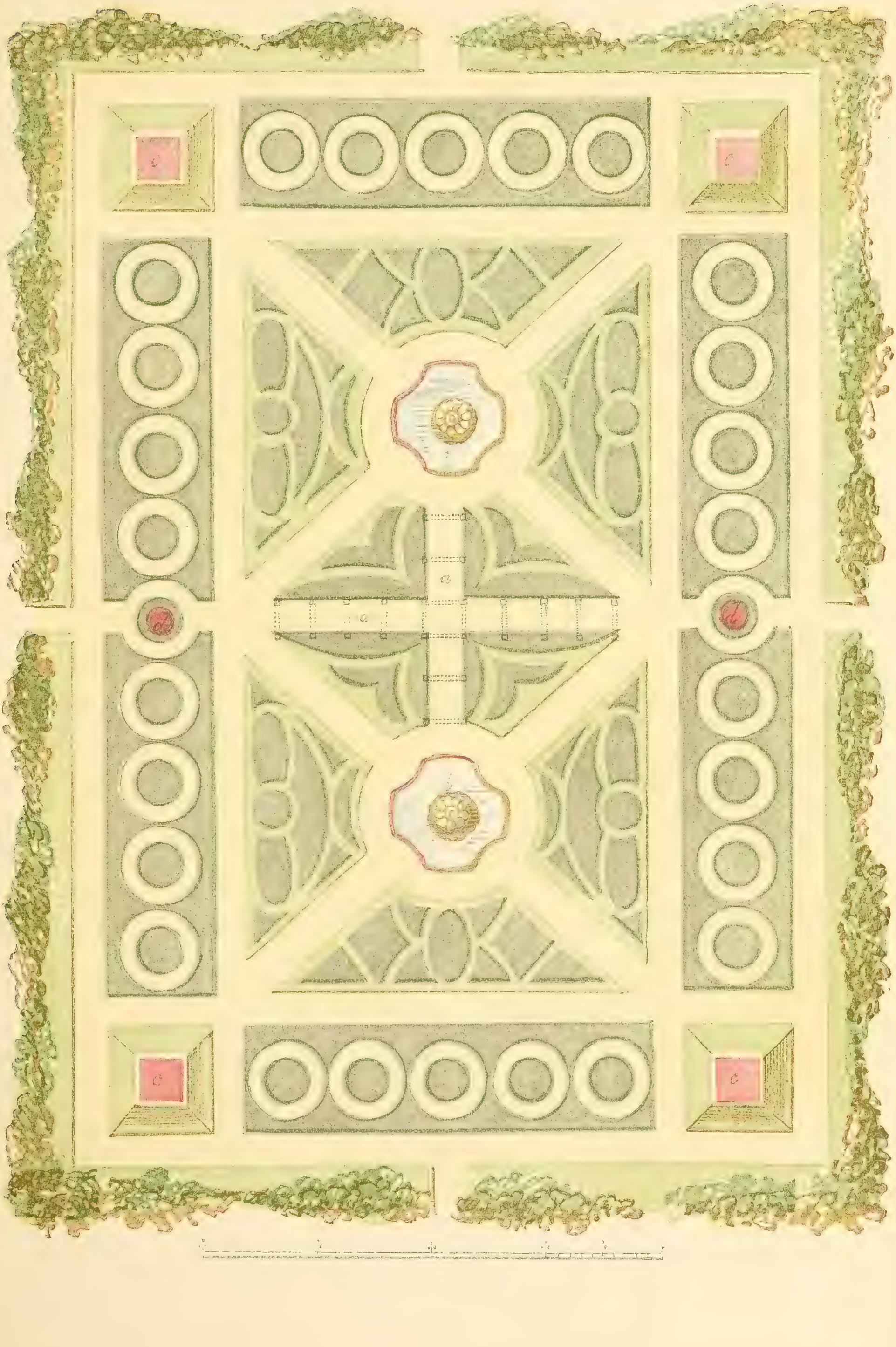
We have great pleasure in submitting to our readers another of a series of designs illustrative of that most delightful department, whether of an extensive or more circumscribed estate—the flower-garden. Disclaiming at once any intention to descant upon the comparative merits or demerits of the particular styles which have characterised the various ages that have elapsed since the systematic disposition and arrangement of the flower-garden first engaged the attention of man, we shall for the present restrict ourselves to a few observations on the principal features of the subjoined figure.

The accompanying sketch is a design for a flower-garden, intended to occupy a quarter of an acre of a ground, which it is presumed will be considered sufficiently small for gardens of very limited extent; and by reference to the letters inserted in the plate, the reader will perceive that every desirable and ornamental feature which is capable of being displayed within such a narrow boundary, has been appropriately and tastefully introduced. Over the central walks of the garden, there is an arched trellis-work, *a*, *a*, which should be constructed of iron wire, and painted green, for the purpose of supporting different descriptions of climbing plants: *b*, *b*, are two fountains, the formation of which must be regulated according to the taste of the proprietor, and if judiciously executed, will constitute truly interesting objects: *c*, *c*, *c*, *c*, are pedestals on which may be placed statues of Flora, Pomona, Diana, or other appropriate ornaments; and *d*, *d*, are likewise pedestals, intended for vases of different forms. The central plot is surrounded with a verge of grass, and the transverse walks thereof are to be edged with box. The six other plots which environ the central one are intersected with strips of grass, the ground colour throughout being intended for flower-borders, which should be slightly raised towards the middle. The circular flower plots which bound the whole, are surrounded by small gravel walks, which are to be edged with box, and these walks should be connected with each other, so as to render each of the plots accessible. The turf on which the pedestals *c*, *c*, stand, is to be inclined at an angle of 45°, and the pedestals *d*, *d*, are enclosed in small circular borders, on which may be placed fragments of rock, or shells, and by the introduction of a little soil amongst them, alpine plants may be successfully grown. The whole of the garden is encompassed by plantations of low shrubs, or American plants, such as Rhododendrons, Ralmias, Daphnes, &c., and the agreeable effect will be greatly enhanced if the boundary border be elevated at the back, so as to deprive the outline of that sombre and monotonous aspect which it would otherwise present; not forgetting, however, to leave a few open spaces at irregular intervals for the purpose of affording a prospect of the more attractive portions of the pleasure grounds.

A flower-garden thus arranged would, we conceive, be in itself a model of perfection, and the minor scale upon which it is designed renders it available in gardens of very limited area. Indeed, it is chiefly with the view of enabling the

FLOWER GARDEN.

DESIGN NO. I.



owners of small gardens to adorn them with this their most lovely feature, that the present design has been attempted. That there are few gardens of the above denomination which can boast of any allotment worthy of the name of a flower-garden, it will be wholly unnecessary to declare to any of our observant readers, the vast majority of small estates being laid out without either unity or beauty of design, as regards the allocation of their respective departments; and while flower-gardens are in many instances denied even a place, where there is a piece of ground devoted to this purpose, the beds, borders, or structures, as well as the individual plants, are assembled together in the most heterogeneous manner, and the greatest possible incongruity and disorder prevail. We are induced thus to remark, not in the language of ridicule, but to urge the advantage and indeed the necessity of entrusting the primary arrangement and disposition of small estates to more competent individuals, as persons of refined and correct taste experience great difficulty in modifying or rectifying the absurd and inconvenient arrangement of the ignorant or capricious projector.

In an estate of two, three, or more acres, what could be a more delightful feature than a flower-garden, arranged according to the present design? The introduction of fountains, of chaste and unique structure, and ornamented with every variety of rock or shell, into the central compartments, with jets of water issuing from every crevice, and propelled with diverse and ever-varying degrees of force, would form most delightful and refreshing spectacles, during the summer months; while the basins which surround them would be most eligible situations for growing aquatic plants. The proposed vases at either end of the central walk, and which might be selected of most elegant and graceful form, would relieve the otherwise dull uniformity of a series of circular plots, and also greatly contribute to enliven the garden during the winter season; indeed, they might be removed in the summer, and their places supplied with a fine specimen or specimens of greenhouse or other plants; and the rock-work which is proposed to be placed around their bases, would both tend to heighten the interest of the whole, and afford an opportunity of introducing a description of plants which would otherwise be excluded. Approaching the exterior, the four pedestals for the support of statues might present to the eye some of the choicest productions of art; and the admission of these may not only be tolerated, but will add much to the general beauty, particularly if the flower-garden be contiguous to, or within sight of, the dwelling-house. There will thus be obtained, within the small compass before named, an harmonious and delightful assemblage of the most exquisite creations of art, and the yet more numerous, varied, and beautiful members of nature's charming and attractive tribes. As we intend furnishing our readers, in future numbers, with other and equally interesting designs, we reserve any remarks that might be offered on the methods of grouping and arranging the flowers in the various plots, and conclude these observations with again recommending the appended plan to any persons who may be desirous of forming new flower-gardens, or who may have occasion to alter or remodel those already in their possession; and whose attention we would direct to an additional singular advantage of the present design, which they will not fail to observe upon a cursory examination of the plate,—that four ornamental structures may be seen from the centre of the trellis-work, while one or more of these artificial ornaments may be viewed from every point of the radiating walks.

* * *

NEW AND RARE PLANTS,

FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR MAY.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ).

THE CACTUS TRIBE (*Cactaceæ*).

Echinocactus eyeriesii; *var.* **glaucus.** Glaucous sweet-scented Porcupine Cactus. A very showy, and, apparently, free-flowering plant, which Dr. Lindley considers a distinct variety, as it differs from the original species in the more acute and less undulating angles of the plant, the spines being more attenuated, and rather darker in colour, the tube of the corolla shorter, of a pale green colour, and destitute of that remarkable shagginess which is so conspicuous in the old species. It may be cultivated in a dry stove, by potting it in poor soil, and watering with caution; increasing tardily by the usual method of cutting off the summit, or more readily by seeds, when they can be procured. *Bot. Reg.* 31.

THE CATCHFLY TRIBE (*Silenaceæ*).

Dianthus bisignani. Prince Bisignani's Tree Pink. This is an ornamental species of *Dianthus*, of a shrubby character, native of the coasts of Calabria and Sicily, where it is found on rocks, and in the fissures of chalk cliffs, near the sea. It flowers in the autumnal months in this country, and requires the protection of a greenhouse or other structure during the winter, and, indeed, is said to thrive best when kept entirely in the greenhouse. *Bot. Reg.* 29.

THE FIGWORT TRIBE (*Scrophularineæ*).

Pentstemon gentianoides. Gentian-like Pentstemon. This beautiful species is a native of the cold mountainous districts of Mexico, where it was first observed by those eminent naturalists Messrs. Humboldt and Bonpland, 11,500 feet above the level of the sea. In the Glasgow Botanic Garden it grew to the astonishing height of four feet in the open ground, and was a most attractive object for a great length of time. *Bot. Mag.* 3661.

THE EPACRIS TRIBE (*Epacrideæ*).

Epacris microphylla. Small-leaved Epacris. A very neat and pretty species, allied to *E. pulchella*, and differing from it chiefly in its branches being more slender and erect, the young shoots hairy, and the flowers being collected together at the extremities of the shoots. It flowers in the spring, at the same time as most of the other species; and its slender graceful habits, and pretty pinkish-white blossoms, render it an interesting little plant. *Bot. Mag.* 3658.

CLASS II.—PLANTS WITH ONE COTYLEDON (MONOCOTYLEDONEÆ).

THE LILY TRIBE (*Liliaceæ*).

Funckia albo-marginata. Variegated Funckia. A highly interesting plant, hitherto treated as a greenhouse species, but most probably quite hardy, or, at least, half-hardy. It is supposed to have been introduced by Dr. Van Siebold from Japan, and flowers in the Glasgow Botanic Garden in the month of July. It may be at once distinguished by the broad white margins of its foliage. *Bot. Mag.* 3657.

THE ORCHIS TRIBE (*Orchidaceæ*).

Phaius albus. White Phaius. A most lovely new orchidaceous plant, first discovered by Dr. Wallich upon Mount Chandaghiry in Nepal, and since introduced to this country by Mr. John Gibson, His Grace the Duke of Devonshire's collector. This species is justly said by Dr. Lindley to "rank amongst the most showy of the order," and the drawing for the Botanical Register was obtained from the collection of Messrs. Loddiges in July last. In a former part of the present Number of this Magazine a drawing of this charming plant will be found from Chatsworth. *Bot. Reg.* 33.

Cattleya pumila. Dwarf Cattleya. This extremely interesting little plant is unquestionably distinct from any species of *Cattleya* previously described. It flowered last year in the collection of John Allcard, Esq., by whom it was imported from Essequibo, and a drawing of it communicated to the Editor of the Botanical Magazine. The plant is of very dwarf habits, the leaves and flowers solitary, and the latter are of a rich rosy-purple colour, and very handsome; the labellum is large, expanding at the extremity, and of a deep purple colour. *Bot. Mag.* 3656.

NOTICES OF NEW AND RARE PLANTS

IN FLOWER IN THE PRINCIPAL NURSERIES IN THE VICINITY OF LONDON.

Messrs. Henderson's, Pine-Apple Place. *Clintonia pulchella.* This elegant and highly beautiful little annual is now flowering most profusely at this nursery; we have before recommended it to the notice of our readers, and we now add that it is worthy of any and every encomium that may be bestowed upon it. Many fine specimens of sleaths, and other beautiful greenhouse plants, are also flowering in a high state of excellence, and are cultivated in the usual neat and superior manner for which these gentlemen are deservedly noted. A very large plant of *Callionema pulchra* especially attracted our attention, and the peculiar gracefulness of its mode of growth, as well as the abundance of its pretty pink blossoms, entitle it to a situation among the best greenhouse plants. The excellent collection of Alpine, and other herbaceous plants at this nursery, contains many very interesting features at the present time, and a neat iron frame has been erected over them, for the support of mats to protect them during the winter, which we may probably make the subject of future notice.

Mr. Knight's, Chelsea. A most remarkable species of *Aristolochia* was in flower at this nursery when we visited it about a fortnight since, which we are inclined to consider as new. The flowers, which are full six inches in length, and probably not less than from three to four inches across, are of a cream-coloured ground, and most beautifully spotted and striped with purple. It is at present, we believe, destitute of a specific name, and appears to be a stove species. A new and very pretty species of *Spiræa* is now producing its pure white, and semi-double blossoms in this collection, and these are of a peculiarly neat and interesting character; the foliage is likewise good, being deeply serrated, and very distinct from that of any known species. *Azalea littoræa.* This is one of the most profuse flowering of all *Azaleas*, and is likewise valuable on account of its producing its blossoms some time after those of all the other species have faded; it is now making a most brilliant display in the conservatory of the above gentleman. An exceedingly interesting species of *Cypripedium* is also flowering at the nursery above named, and is part of an importation received from North America during the last year. The petals of the flowers are pure white, and the large protuberant lip is of a delicate blush colour, liberally spotted and blotched with lilac and purple. We should consider it a new species.

Messrs. Loddiges', Hackney. *Aspasia variegata.* This is a very interesting and beautiful little orchidaceous plant, and is flowering at the present time in the extensive collection of these gentlemen. The flowers assimilate in colour and beauty to some of the splendid species of *Zygopetalum*, but are inferior to them in size. It is an indispensable feature in a good collection of these plants. These gentlemen have likewise a new orchidaceous plant in flower, which will most probably prove to be a species of *Aspasia;* it is not so pretty as the one just noticed, the flowers being for the most part yellow; still it is an interesting plant, and worthy of attention. Some remarkably fine specimens of *Dendrobium moschatum* are flowering in a most extraordinary manner with these gentlemen, and on two spikes of flowers which were growing in contact with each other, we observed no fewer than thirty large and perfect blossoms. The appearance of the plants, each of which is producing a great number of similar spikes of flowers, is most magnificent. In another part of the house, two excellent plants of *Saccolobium præmorsum* are exhibiting individually two large spikes of their charming blossoms, which are perhaps among the most lovely features of this beautiful tribe.

Mr. Low's, Clapton. *Syringa Josikeii.* This is at present a rare species of *Syringa*, very distinct from any previously known, and apparently as hardy as any of the species which are usually cultivated in our gardens. In its foliage and wood it is superior to the common lilac, being stronger and bolder in its habit; the flowers however are not so brilliant in colour, as they are much paler. Its odour is not so powerful, and more agreeable than the species just alluded to, and it is now flowering at this nursery in the open ground. *Chysis aurea* is flowering profusely at this time in the orchidaceous-house, and is a valuable feature in this interesting tribe. There is also a very fine *hybrid mimulus* in flower in the greenhouse of this gentleman, which is of a stronger and more luxuriant habit than most others of the same character, with which we are acquainted; but its distinguishing feature is that the spots in the flowers, (which otherwise resemble *M. Smithii*, and others,) are not of one uniform colour, but are mottled and blotched in a most curious and interesting manner. It is certainly a most ornamental plant, and highly worthy of a place in any collection where variety is sought for or desired.

Messrs. Rollisons', Tooting. *Maxillaria tenuifolia.* This is a new and exceedingly pretty species of the extensive genus above mentioned, and derives its name from its small and narrow foliage. The flowers are small, but singularly beautiful, combining in them a striking variety of rich and showy colours. It is a plant of considerable merit, and should be in every collection of orchidaceæ. In the excellent collection of these gentlemen a new and curious species of *Pleurothalis* is now in flower, the blossoms of which, though small, are interesting and pretty, and are produced in racemes which spring from the centre of the leaves. It is valuable only to lovers of novelty. Messrs. Rollison also possess a new species of *Dendrobium*, now coming into flower, which they have recently imported from Ceylon; the flowers appear to resemble *D. cucullatum* externally, but they were not expanded when we saw them, and the most remarkable feature in the plant is that the pseudo bulbs are nearly an inch in diameter at the base, from which they gradually become elongated into slender stems, from one to two feet in height, and on these latter the young shoots and flowers are produced. It will probably prove valuable, and will doubtless be new. *Helichrysum macranthum.* This is a very elegant new species of this interesting genus, the flowers of which are of a delicate, pale rose-colour, and are very interesting and ornamental. It is now in flower in the greenhouse of this nursery.

Mr. Young's, Epsom. *Philibertia grandiflora.* This interesting climbing greenhouse plant, which is yet extremely rare, is now flowering profusely at this nursery; the flowers are of a light stone-coloured ground, and are prettily streaked and marked with purple. The plant produces three or four flowers from the axil of each leaf, and it appears to flower in very abundant succession; on which account it will prove a valuable accession to our present stock of greenhouse climbing plants. *Malva Towardii.* This is a handsome new species of *Malva*, producing a large spike of its showy blossoms when not more than one foot high. It is a half-hardy species, and is now in flower in the open ground, at the above nursery, though it will doubtless require the protection of a greenhouse or frame in the winter. *Platystemon Californicum.* This pretty annual is now producing its elegant pale sulphur-coloured blossoms in the nursery of this gentleman, and forms a most interesting feature among other hardy annuals. *Bartonia aurea*, another plant of annual duration, and equally rare and interesting, is also exhibiting its bright orange-coloured flowers most profusely at this nursery, and is highly worthy of a place in every collection.

NOTICES ON THE CULTURE OF NEW AND RARE PLANTS

IN THE PRINCIPAL NURSERIES IN THE VICINITY OF LONDON.

On the propagation of hybrid and other Azaleas.

The numerous splendid greenhouse species and varieties of Azalea are, perhaps, of all other greenhouse plants the most ornamental, and none more amply remunerate the cultivator for any care and attention that may be bestowed upon them; while the early period of the season at which they flower, the size and brilliancy of the colours of their flowers, and the very abundant manner in which they are produced, all contribute to impress them as objects of real and permanent interest and value. In cultivating the more valuable sorts, and those of recent introduction, some persons experience considerable difficulty; and notwithstanding that every precaution is taken to defend them from injury, it is found that many of them perish during the winter season, and others, though they are preserved alive, are maintained in such a sickly condition that they never flower in perfection. It is perfectly natural to suppose that for these injurious effects there must be an exciting cause, and this cause having been duly sought for, has been found to be the following. The more delicate and valuable sorts are all furnished with such small and weak roots, that, in the winter season, the slightest excess of moisture causes them to rot, and as this process proceeds, the plants become unhealthy, and their destruction is almost inevitable; for it is impossible for any plant to subsist after its roots—which are the receptacles and reservoirs of its nourishment—have decayed. To the method of propagation which is pursued by most cultivators, this ill success is entirely attributable; for, as the mode of multiplying these plants by cuttings is so very simple, and is attended with such little difficulty, it is very generally adopted, and the consequence is, that the plants thus produced are never able to form roots of their own sufficiently strong for enduring any superabundance of moisture that may accumulate in the pots, and the retention of which is sometimes almost unavoidable in the cold and damp weather which is so prevalent in the winter months. To remedy this evil, Messrs. Knight, Henderson, and other eminent cultivators, propagate the more delicate varieties by grafting or inarching the young shoots on stocks of *A. indica phœnicea;* and the success which attends the performance of this operation must be obvious to every person who has witnessed the splendid specimens in the collection of either of the above gentlemen, and the superb manner in which they flower. We last month had the pleasure of recording, that we saw in the collection of Messrs. Henderson two of the most magnificent specimens of a beautiful variety of this genus which we ever previously witnessed; and we attribute their extraordinary beauty in a great measure to the fact of their having been grafted on stocks of the variety before named. We might also direct attention to the many beautiful specimens in the collection of

Mr. Knight, where sorts that are considered extremely difficult to cultivate, are, by this treatment, brought to a high state of excellence. We therefore strongly recommend the practice of this system to our readers, as a means of rendering these much-admired plants still more interesting and ornamental, and indeed, as the only means by which some of them can be induced to flower at all. The operation may be performed in precisely the same manner as it is with Camellias, and also at the same period of the growth of the plants, that is, as soon as they have ceased flowering. They may likewise be grafted successfully, provided that some clay, or, what is much more suitable, a glutinous composition termed "gardener's wax," be placed round the place where the graft and the stock are united, for the purpose of excluding light and air. A number of stocks may be readily produced from cuttings, and the height at which they should be grafted must be regulated entirely according to the taste of the cultivator, as, by pruning them, or allowing them to grow to any required length, the plants may be kept either as standards or dwarfs, both of which systems are exceedingly ornamental; but perhaps the most suitable height for stocks on which to perform this operation, is, from nine to eighteen inches, higher than which their appearance is more novel than interesting.

OPERATIONS FOR JULY.

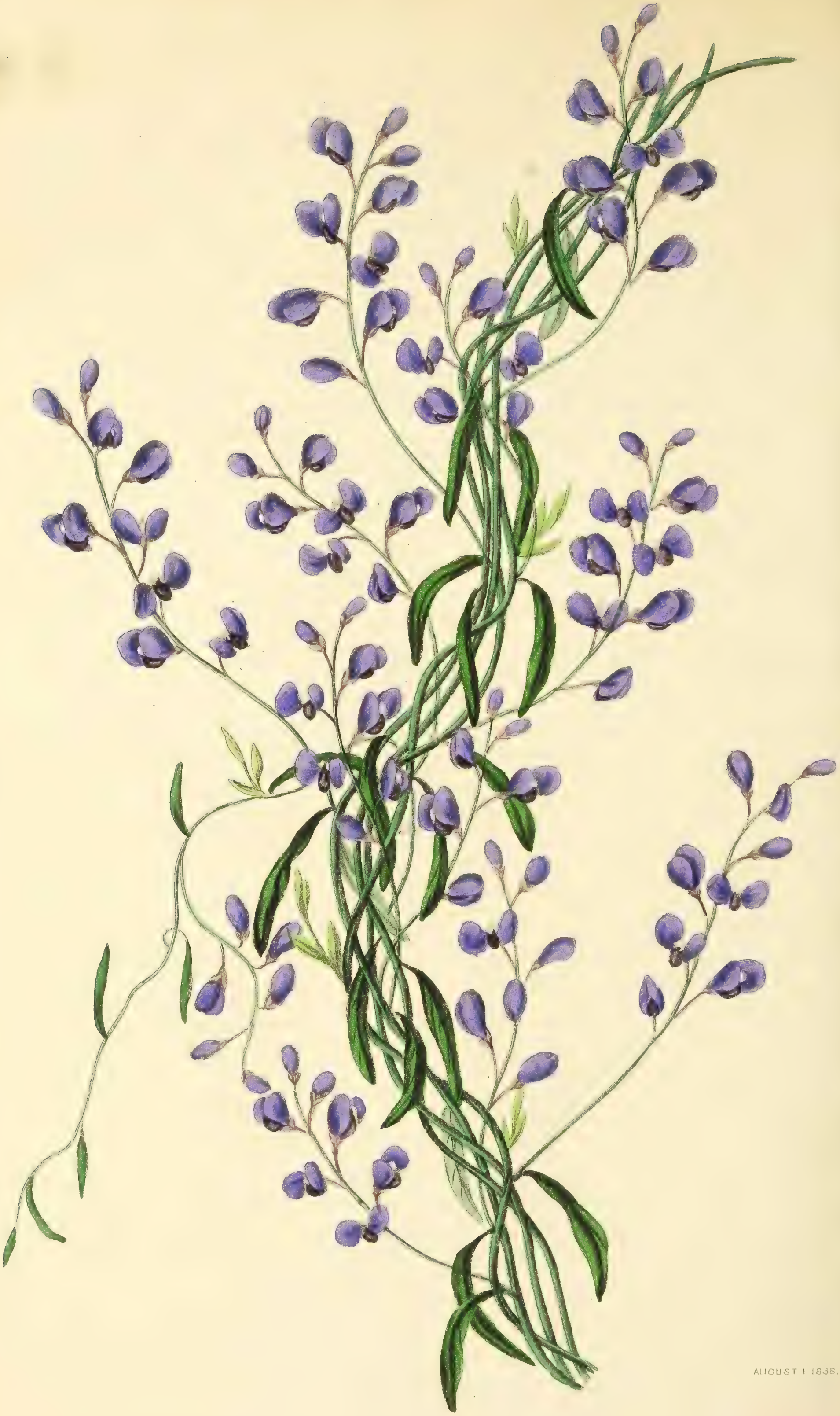
As the mean temperature of the atmosphere is usually higher this month than at any other period of the year, and the influence of the sun is more uniformly and powerfully felt, it is of chief importance that every plant, in whatever situation, but more especially those in artificial circumstances, should be carefully and constantly supplied with water when required; otherwise the great evaporation, both from the soil and the leaves of plants, would greatly injure, and in many cases prove destructive to, vegetable life. The great lack of rain during the spring months of this season has rendered attention to this point more particularly necessary in the open air, and not only herbaceous and half-hardy plants, but many shrubs and trees that are growing in exposed situations, and whose roots lie near the surface of the ground, must be abundantly watered, if this is not furnished from natural causes.

Orchidaceous plants should be efficiently shaded during the heat of the day, and the time of putting on and taking off the materials used for this purpose must be regulated according to the aspect of the house. As the roots of many of them will now be protruding through the soil, particular care should be taken to guard these from the rays of the sun, especially if they cannot conveniently be covered with moss or soil; and those which are attached to blocks of wood, or suspended in baskets, should be frequently watered. The atmosphere of the house should likewise be kept slightly humid, to counteract the effects of the increased evaporation.

Stove plants will derive great advantage from a partial shading during the glare of the day at this season, which will preserve them in their natural luxuriance, and also render them less liable to injury from drought. Water must be administered liberally, both to the roots, and also over the leaves and branches by a syringe; but this latter operation should never be performed until the sun has ceased shining on the house, or the leaves would be in danger of being scorched. Cuttings of any desirable sort may now be successfully struck, and all climbing plants should be kept within due bounds.

Greenhouse plants cannot be too sedulously attended to with regard to watering, as there are frequently more plants lost this month (particularly heaths) for want of water, than there are in the winter season, through excessive moisture. This is not so much owing to the direct influence of the sun upon the surface of the soil in the pots, as to the heat of the sun penetrating the pots, and burning or parching the root fibres, which usually find their way to the sides of the pot. It is therefore important, that where the pots are very much exposed to the sun, they should be protected by moss or other similar material, and that in watering, not only the soil in the pots, but the pots themselves, should be thoroughly wetted. The artificial heat applied to *Camellias* may now be gradually diminished, and when their growth is completed, they will not require so much water, though the soil should never be allowed to become too dry. *Pelargoniums* should have their shoots shortened to within a few inches of the stem, as soon as their flowers have faded, when the shoots may be made into cuttings, and struck in a gentle heat under a hand-glass, and the old plants should be repotted, and placed in a slightly humid heat. Succulent plants, that have ceased growing, should be watered rather sparingly, and only allowed sufficient moisture to preserve them from drooping or shrivelling. Propagate by cuttings any greenhouse plants whose shoots are of a proper size and consistence.

In the flower-garden, as we have before remarked, watering is of primary importance at this season. *Chrysanthemums* that were struck from cuttings last month, may now be planted out, retaining a few in pots for the greenhouse or conservatory. It will be advisable to clear away a portion of the flower-stems that are produced on the old plants, otherwise they will not flower in perfection. Another sowing of hardy annuals may be made this month, for the purpose of obtaining a succession of flowers in the autumn. Seeds of any plants that are now producing them, and which it may be desirable to save, should be carefully collected on a fine day, and spread out upon paper to dry. *Dahlias* will require watering this month, but it is better to place some damp, retentive, rotten manure round the base of the stem, to the distance of one foot or eighteen inches, which will effectually preserve the roots in a cool and moist condition.



AUGUST 1 1836.

Comosperma gracilis.

COMESPERMA GRACILIS.

(SLENDER COMESPERMA.)

CLASS.
MONADELPHIA.

ORDER.
OCTANDRIA.

NATURAL ORDER.
POLYGALEÆ.

GENERIC CHARACTER.—*Sepals* five-sepalled, deciduous; two inner sepals of the form of wings, three outer ones small. *Petals* three to five, united with the tube of the stamens, the lower one keel-formed, three-lobed ; middle lobe beardless, entire, or emarginate ; two lateral petals scale-formed, two superior ones alternating with the superior sepals of the calyx. *Stamens* eight, united into a tube, which is cleft in front, free at the apex. Anthers bursting by a terminal pore. *Fruit* capsular, two-celled, spatulate, tapering towards the base. *Seeds* with a long tuft of hair at their base.—*Don's Gard. and Botany.*

SPECIFIC CHARACTER.—*Plant* suffruticose. *Stems* numerous, very slender, twining. *Leaves* few in number, linear-lanceolate, bluntish, slightly wavy at the margins. *Racemes* axillary, many-flowered. *Flowers* very numerous ; wings bright blue ; keel purple. *Capsules* half an inch long, flattened, with four projecting angles, enlarging towards the upper extremity, two-seeded.

IF the vast number of plants which are constantly being introduced to this country, were to be subjected to the test of well-founded and established criteria, and cultivated only when possessed of real and sterling merits, we imagine that many which are now allowed a place in our collections, solely on account of their novelty, would speedily be discarded, and their place supplied with older, but more truly ornamental and valuable species. From such a circumstance, however, the present new and highly-interesting plant would be in no danger of suffering any detraction in the cultivator's esteem, as its graceful and elegant habits, and the number, the beauty, and the durability of its blossoms, combine to render it at once a desirable and ornamental feature in any collection.

This pretty species was raised in the Epsom nursery in the year 1834, from seeds casually communicated to Messrs. Young, and probably received from Australia, of which vast and prolific continent it is doubtless a native. In the year 1836 it first produced its flowers, but they were then far inferior to those which have since been developed, and at the time our drawing was taken, the plant was one of the most beautiful objects we ever witnessed, the profusion of flowers being truly astonishing.

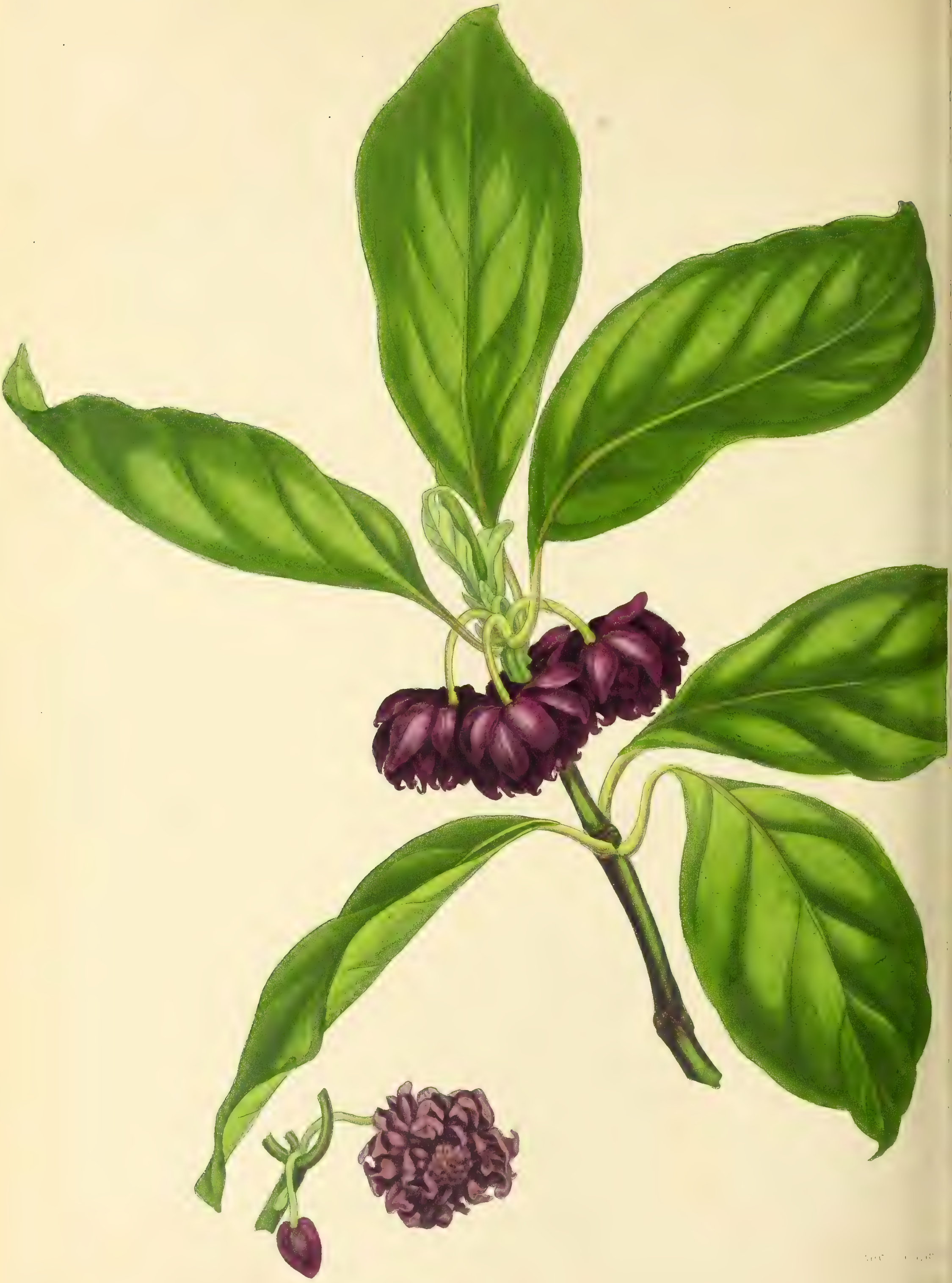
It is an extremely slow-growing plant, the specimen raised in 1834 not being at the present time more than three feet high; and another peculiarity is, that the leaves, which are never very conspicuous, progressively decay, leaving the base of the stems entirely naked. Being a twining species, it is important that the shoots should be secured to stakes, or other material, in the direction which they are desired to take, at an early period of their growth, otherwise they will twine around each other in such a manner, as to render a more regular disposition of them impracticable without greatly injuring them.

In its cultivation there are few particulars worthy of remark, except that it has been deemed advisable, in potting, to elevate the soil a little in the centre of the pot, to facilitate the escape of water, as the roots, being small, are susceptible of injury from any redundance of this element. A mixture of loam and peat has been found a suitable compost for this plant, but it may here be observed that the soil should be enriched as much as may be deemed consistent, in order to promote a greater degree of luxuriance than has yet been attained.

Cuttings of the young shoots will strike if planted in pure sand, placed in a gentle heat, and preserved from superfluous moisture; and seeds, which ripen tolerably well, will most probably vegetate by being slightly stimulated.

In the nursery of Messrs. Young, Epsom, the specimen from which our figure was obtained flowered in great perfection in April last.

The generic name alludes to the little feathery tuft of hairs which is attached to each of the seeds.



Illicium floridanum.

ILLICIUM FLORIDANUM.

(FLORIDA ANISEED-TREE.)

CLASS.	ORDER.
POLYANDRIA.	POLYGYNIA.

NATURAL ORDER.
MAGNOLIACEÆ.

Generic Character.—*Calyx* of three to six petal-like sepals. *Carpels* stellately disposed, capsular opening on the under side, one-seeded. *Seeds* shining. *Don's Gard. and Botany.*

Specific Character.—*Leaves* petiolate, broadly ovate, acute, partially reclinate. *Petals* twenty-seven to thirty, dark purple, outer oblong, inner ones lanceolate, usually curved inwards at their extremities

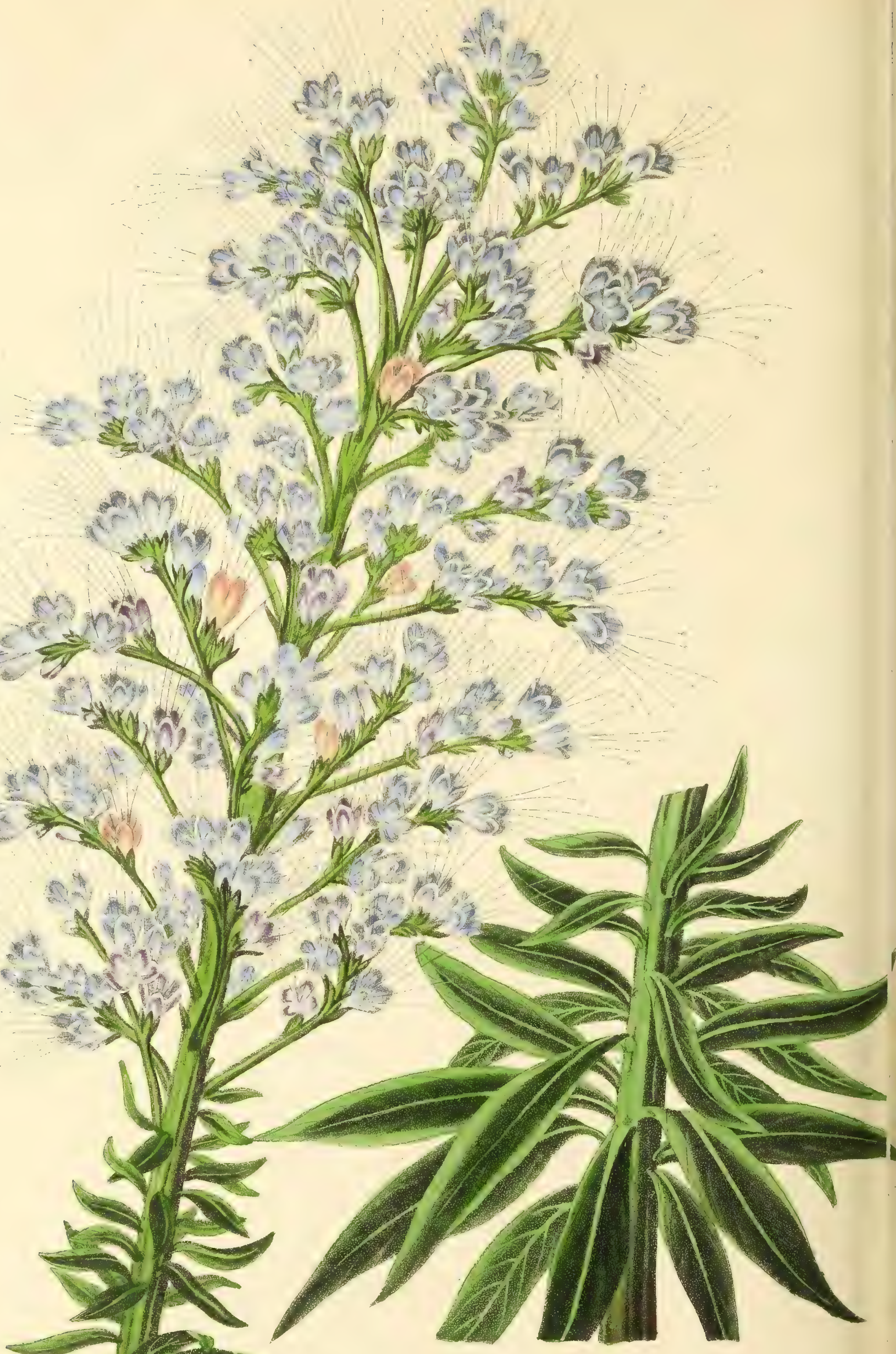
The principal merit of the plant represented in the accompanying plate, is the delightful fragrance resident in its leaves and flowers, and which is possessed to so great a degree as to obtain for it a generic appellation which signifies "to attract," or "to allure." Its foliage and flowers, however, are by no means destitute of other attractions, for the bold and handsome character of the former, together with the fine pendent clusters of dark-purple double blossoms, constitute it an ornamental as well as a fragrant species, and prove that it possesses charms and allurements for the organs of vision, in conjunction with its recommendations to the olfactory sense.

This species has been known in this country for more than seventy years, having been introduced in the year 1766; notwithstanding which, it is far less common than many plants of recent introduction, and is not usually well cultivated. It appears to us to require nearly the same treatment as the genus *Camellia;* that is, so far as relates to light, moisture, and soil, not needing the change of temperature which is usually given to that genus. A situation in a house with a western aspect, an abundant supply of moisture, both to the roots and also over the leaves and branches, during the growing season, and a compost of loam and heath-soil, in which the latter should predominate, with careful attention to potting and drainage, would doubtless tend much to the improvement of this plant, and also to its cultivation in a superior manner to that which has hitherto been witnessed. We would also suggest, that this plant be turned out into the border of the greenhouse or conservatory, as it is more than probable that, in such a situation, it would exhibit itself in a new and far more interesting character than if confined in a pot, as it has generally been up to the present time.

That it is not more extensively distributed through our collections is, we conceive, chiefly owing to its being rather difficult to propagate, and also because it does not produce a great number of young shoots. Cuttings taken from the extremities of the latter, and planted in pure sand, will strike with certainty, though tardily, if placed in a gentle hotbed, and covered with a small glass. It is usually increased, however, by layers, which should be fastened down into a pot placed at the required distance from the one in which the plant is growing, but it is almost indispensable to the success of this method that the shoot to be layered should either be tongued, or have an incision made in it, at the point from whence the roots are expected to proceed.

This plant is a native of West Florida, and is said to be found in great abundance on the banks of the river Mississippi, and in low marshy situations near the town of Pensacola.

The generic name is explained in the preceding page, while the specific appellation refers to the native country of this species.



AUGUST 1, 18

Echium giganteum

ECHIUM GIGANTEUM.

(GIGANTIC VIPER'S BUGLOSS.)

CLASS.
PENTANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
BORAGINEÆ.

GENERIC CHARACTER.—*Calyx* five-parted. *Corolla* funnel-shaped or campanulate; throat wide, naked; segments of the limb unequal in many of the species. *Stamens* exserted. *Style* bifid at top, hairy at the base. *Nuts* four, one-celled, turbinate, gigartoid, scabrous, imperforated at the base, fixed at the bottom of the calyx.—*Don's Gard. and Botany.*

SPECIFIC CHARACTER.—*Stem* branched, hoary at top. *Leaves* lanceolate, bluntish, three to four inches long, and about half an inch broad, tapering at the base into half stem-clasping petioles. *Calycine* segments linear, lanceolate, mucronate, unequal. *Corolla* white, fading to purplish; segments obtuse, nearly equal.—*Don's Gard. and Botany.*

WITH the great majority of the plant cultivators of this country, the preference for particular flowers is almost as fleeting and inconstant as that for dress; and as, in that fickle propensity, the objects which at one time excite the most lively interest, and are held in the highest estimation, are after a time displaced by other favourites, and sink into apparent oblivion; till on a sudden they are again elevated to their former position, are invested with their previous or even additional charms, and carry away the minds of men willing and enthusiastic captives to their attractive influence.

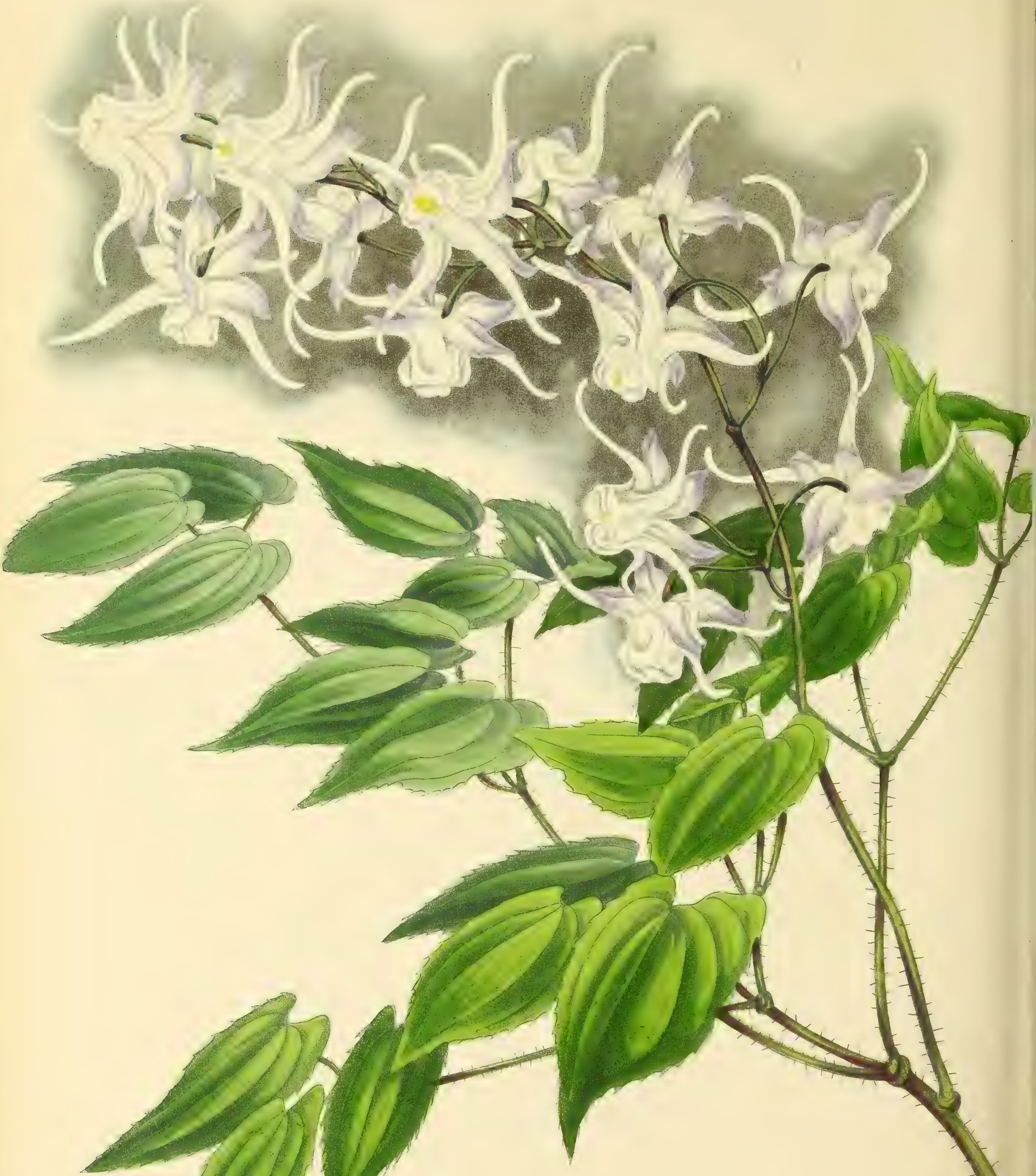
The primary notice and subsequent neglect of the present plant, as well as of many of its allies, prove that it has passed through two of the changes above delineated; but with regard to the reaction of public opinion in its favour, we are not aware that any such circumstance has transpired; and, being fully sensible of its merits, we have taken the present opportunity of introducing it by a drawing to the attention of our readers, as an old plant that is highly worthy of extensive cultivation.

It is somewhat singular, that of the numerous species of *Echium* which have been introduced to this country, so few are now cultivated in our collections; as it is very rarely that we meet with any of the greenhouse species. They are all of them exceedingly beautiful, but the one here figured is particularly interesting and ornamental. It was received by Messrs. Rollison, Tooting, under the name with which it now appears, but there exists some little doubt whether this appellation is correct, as the specimen in the collection of these gentlemen has not at present attained the great height for which *E. giganteum* is remarkable, and the flowers are pale blue. In other respects, it corresponds with the description above given.

The flowers are produced in a large terminal spike, and after those first expanded have faded, they are succeeded by others on smaller lateral spikes, the plant thus continuing in bloom for several months; on account of which, and of the bright azure colour of the flowers, it is a welcome and valuable acquisition to a collection of greenhouse plants.

It is cultivated without difficulty by being potted in a soil composed of sandy loam and heath-mould, not requiring a very large pot, but some caution being necessary in the administration of water. Cuttings, if procured, would most probably strike freely in sand, under a bell-glass, but the mode of propagation by seeds appears to be the preferable one, when these ripen themselves sufficiently.

This species is a native of the Canary Islands, and, according to Loudon, was first introduced to this country in the year 1779. The drawing now given was taken from a specimen in the nursery of Messrs. Rollison, Tooting, in the month of April of the present year, and is now (August) again beautifully in flower.



AUGUST 1.1838

Epimedium macranthum.

EPIMEDIUM MACRANTHUM.

(LARGE-FLOWERED BARREN-WORT.)

CLASS.	ORDER.
TETRANDRIA.	MONOGYNIA.

NATURAL ORDER.
BERBERACEÆ.

GENERIC CHARACTER.—See vol. v., p. 123.

SPECIFIC CHARACTER.—*Leaves* thrice ternate; leaflets cordate-ovate. *Petioles* hairy. *Racemes* many-flowered. *Sepals* linear, obtuse. *Petals* ovate-lanceolate, the exterior ones as well as the interior furnished with spurs of double their length.

AMONGST the numerous individuals who are engaged either for pleasure or emolument in exploring the botanical treasures of unknown regions, and from thence diffusing throughout the world the various new and valuable plants which they are fortunate enough to discover, Dr. Siebold is peculiarly entitled to honourable mention for his zealous exertions in Japan, which have furnished to the collections of Europe during the past few years a greater number of truly beautiful plants than had been previously received for a considerable length of time. Several of these plants have appeared at various times in our Magazine, and the annexed figure represents another of a peculiarly interesting character; still there are a vast number which have never yet flowered in this country, and others which have not been received from the Continent, the most deserving of which we shall continue to figure as opportunities may offer.

This species, it will be seen, bears some resemblance to the one (*E. violaceum*) figured in our last number, though it is obviously distinct from it, and is unquestionably superior, both the flowers and foliage being larger, and of a stronger and bolder habit; the flowers are likewise of a lighter colour, are produced rather more numerously, and at a shorter distance from each other on the spikes, and are usually in clusters of three.

We received this plant at Chatsworth in the autumn of last year, through the kindness of Mr. Newman, the director of the Paris Botanic Garden, since which time we have seen it endure the open air during the past severe winter with perfect impunity, and without any other protection than a slight additional covering of light soil.

It flowers most abundantly in the months of April and May, at which time our drawing was taken at Chatsworth in the present year.

Either cultivated in a pot, or planted in the open ground, it is a most delightful and ornamental little plant; and, from the facility with which it may be grown, the early period of the season at which it produces its delicate and showy blossoms, as well as the great abundance of the latter, (plants of a moderate size bearing three or four spikes of flowers,) it should be in the collection of every admirer of hardy herbaceous plants.

The specific name alludes to the large size of the flowers compared with those of the other known species, and this plant is frequently called *E. grandiflorum*, which has precisely the same signification.

PLEASURES OF GARDENING.

Gardening, as a recreation, has ranked among its votaries illustrious princes, and renowned philosophers, and has ever been the favourite amusement of the most eminent and worthy of mankind, whether occupying exalted positions in public life, or fulfilling the more retired and unobtrusive duties of a private sphere. It is at once a pleasure of the greatest, and a care of the meanest, and indeed, an enjoyment and occupation for which no man can be too high or too low. The interest which flowers have excited in the breast of man, from the earliest ages to the present day, has never been restrained to any particular class of society, or quarter of the globe. Nature seems to have liberally distributed them over the whole world, as precious medicaments for both body and mind, to impart cheerfulness to the earth, and to furnish agreeable sensations to its inhabitants. The savage of the forest, in the joy of his heart, binds his brow with the native flowers of his romantic haunts, whilst a taste for their cultivation increases in every country, in proportion to its advancement in civilization and refinement. Love for a garden has a most powerful influence in attracting men to their homes; and on this account, every encouragement that is given to promote a taste for ornamental gardening, secures an additional guarantee for domestic comfort, and the unity, morality, and happiness of the social circle. It is likewise a recreation which conduces materially to health, advances intellectual improvement, softens the manners, and subdues the tempers of men.

Flowers are of all embellishments the most beautiful, and of all the sentient tribes, man alone seems capable of deriving enjoyment from them. The love for them commences with infancy, continues unabated throughout the period of adolescence and youth, increases with our years, and becomes a great and fertile source of comfort and gratification in our declining days. The infant no sooner walks, than its first employment is to plant a flower in the earth, removing it ten times in a day to wherever the sun appears to shine most favourably. The schoolboy in the care of his little plot of ground is relieved from his studies, and loses all the anxious thoughts and cares of the tasks in which he has been engaged, or the home which he may have left. In manhood, our attention is generally demanded by more active duties, or by more imperious and perhaps less innocent occupations; still a few hours' employment in gardening affords a delightful recreation, and as age obliges us to retire from public life, the attachment to flowers, and the pleasure in gardening, return to soothe the latter period of our life.

In the growth of flowers, from the first tender shoots which rise from the earth, through all the changes which they undergo to the period of their utmost perfection, man beholds the wonderful process of creative wisdom and power. He views the bud as it swells, looks into the expanded blossom, and delights in its rich tints and fragrant odours; but above all, he feels a charm in contemplating the precise conformation and mutual adaptation of its organs, and the undeviating regularity with which their various metamorphoses are effected; before which, all the combined ingenuity of man dwindles into nothingness. For while the simple cultivation and management of flowers is productive of much innocent pleasure, how immensely is that pleasure enhanced when science is secured as its auxiliary! The cultivator of flowers on whom the light of science has just dawned, feels like one emerging into a new sphere of existence. A multitude of subjects, previously unheeded, present themselves to his consideration, which as he proceeds to contemplate them, diverge into successive series of interesting associations, and awaken in his mind emotions of pleasure and gratification of which he was before unconscious. Instead of being content blindly to follow the ordinary routine of management which example prescribes, he perceives that certain plants require a peculiar mode of treatment, and is led to inquire why that treatment is necessary. In prosecuting this investigation, other and more intricate subjects present themselves to his mind; thus, inquiry begets inquiry, and one suggestion gives birth to another, until, in the solution of them, he discovers that all nature is governed by universal and unerring laws, that the annual changes to which plants are subjected are intended to answer specific and important ends, and that the whole chain of gradation in organized matter is linked together in the most perfect order and harmony. This knowledge attained, he suffers not the most trifling of nature's phenomena to pass unnoticed. The development of a leaf on the most familiar tree, offers a field for his observation, for he learns that it is destined to bring forth, nourish, and mature a germ, which is capable of producing a distinct tree, that in process of time would equal or even exceed in size the parent that forced it into existence. He observes the leaves wither and fall in the autumn without regret, informed that they have duly fulfilled their important functions, and that, were they capable of remaining, they would probably excite the young buds into premature action, and cause them to fall a prey to the inclemency of the coming season.

But science is likewise capable of imparting an interest to the most common gardening operations. The pupil of science scatters his seeds into the ground and covers them with soil, because he knows that they must be thus excluded from light, and enveloped with soil, that the various genial gaseous elements involved in such a situation may stimulate the vital principle into action; he, however, spreads the soil over them very lightly, since he is equally well aware that proximity to the atmosphere is alike essential to their germination. He watches the young seed-lobes as they appear through the ground, and in imagination perceives the little rootlet issuing simultaneously from the newly excited embryo; the first leaves are soon formed, and calculating correctly on a similar extension and ramification of the root, he takes the earliest opportunity of transplanting it to its desired destination. This operation he either defers till dull and cloudy weather, or affords his plants an artificial shading from the sun, well knowing that the delicate seedlings require time gradually to accommodate themselves to their new position, before they can absorb sufficient liquid nutriment to counteract the profuse evaporation which would take place, were they not screened from the sun's rays.

On such a subject, however, it is needless to expatiate, for after all, the pleasures of gardening are not derivable from elaborate treatises, neither are they easily communicable. They must be sought after to be duly appreciated; and once tasted, the mind will never become satiated, but will rove as the bee from flower to flower in search of delicious and nutritive sweets, extracting fresh stores of wisdom and pleasure from each successive object, till finally, it succeeds in amassing that which most truly constitutes man rich—a fund of knowledge of his Creator's works.

REMARKS ON THE INFLUENCE OF CLIMATE ON PLANTS.

ARTICLE III.—THE INFLUENCE OF LIGHT—(*continued*).

Having, in preceding articles, directed the attention of our readers to the influence of light upon the plants which are usually cultivated in the stove, as also upon those which are termed "succulent plants;" and having, from the varied effect of such influence therein demonstrated, deduced a few practical inferences with regard to the culture and management of the more important members of these sections; we proposed taking into consideration the effect of different degrees of light on the various tribes of greenhouse plants, and endeavouring to show how such plants may be improved and cultivated to greater perfection by the application of a correct knowledge of sound physiological principles, and the examination and investigation of their natural habits in this respect.

As we intend on the present occasion to treat this subject solely as a practical question, we proceed at once to the matter under consideration; and will premise by stating, that in the term "greenhouse plants" we include heaths, orange trees, camellias, pelargoniums, and miscellaneous plants requiring the protection of the greenhouse; upon which five divisions we propose offering a few separate remarks, not however upon the whole system of their cultivation, but solely with reference to the subject now before us. There is perhaps no genus or tribe of plants in the whole vegetable kingdom, the cultivation of which is apparently attended with such great difficulty, and in which such numerous failures are constantly experienced, as the genus *Erica;* and although some eminent cultivators, who have written on the subject, deny that there is any difficulty in growing the plants of this beautiful genus, the very fact of their considering it necessary to lay down such a number of specific rules for their management, supplies their own confutation of such a statement. The difficulty, therefore, in cultivating heaths, as indeed any other plants, ceases to exist only when their particular habits are correctly known, and until this information is acquired, it is vain to think of growing them to perfection. The ill success which is so frequently experienced, is in a great measure attributable to the use of improper soil, to unskilful potting, and injudicious watering; but we imagine that one ordinary and cogent cause is the want of due attention to the influence which solar light possesses or exercises upon them. Every person who cultivates a collection of heaths, or even only a few species of them, must have had the mortification of witnessing some of his plants wither and die during the summer season, notwithstanding he had administered water to them three or four times in the course of a day. It becomes then a question of great interest with the cultivator how this lamentable catastrophe may be averted; and some may be ready to ask, will not placing the plants at a greater distance from the glass, and admitting a free circulation of air by ventilation, preserve them from this sudden destruction?—to which we answer, that the former of these practices is manifestly injudicious, being productive of great injury to the plants in dull weather, by causing them to become drawn and weakly, and consequently rendering them still more tender and susceptible of injury from the sun's influences; while the latter method has been proved to be wholly ineffectual, as we (and we doubt not many other cultivators) have lost specimens of our most beautiful species in a hot summer's day, although the house in which they were kept was ventilated in the most perfect manner possible. This is no doubt the effect of the vehemence of the sun's beams causing such rapid and excessive evaporation that the functions of the plant are deranged or impaired to such an extent as to be unable to maintain the vital principle. We are not prepared to define the connexion between solar light and heat, nor to distinguish the influence of the former from the latter upon plants: it must be apparent to our readers that heat is so intimately concurrent with the immediate light of the sun, that, for practical purposes, it is impossible to consider them apart. We shall be excused, therefore, if in this article on "light" we appear to confound it with "heat." Solar heat and light are such invariable concomitants, that the means employed to mitigate the one, will necessarily in some degree diminish the other; indeed, when treating of light, we may be understood to include its inseparable associate—solar heat.

From the foregoing demonstration of the powerful and injurious influence which the sun's rays exert on the various species of *Erica*, it is palpable that they should never be placed indiscriminately amongst other plants which require a great degree of solar light, but should always be cultivated in a house by themselves; and we are sure that no individual will deny that they are eminently worthy of this distinction, as well as of every care and attention that can be bestowed upon them. We are aware that some of the best heath cultivators have already practised this system, but we are anxious to see it more extensively adopted; and what we now wish especially to enforce, as one of the most important advantages that may be derived from such a system, and as the result of our present inquiry into this subject, is the necessity of shading the house with thin canvass during the heat of the day in the summer months. This canvass should be so placed that it may be rolled on or off the house at pleasure, and it should always be removed when the sun is not shining too fiercely, as it is only a great intensity of solar light which injures these plants, and they should never be secluded from light when the sun is not shining. It is the necessity and propriety of shading which we have all along had in view in speaking of these plants, and to this we again earnestly urge the attention of our readers. It is true that some few of the species of this genus are found in situations where they are exposed to great drought, caused by the intensity of the sun's rays during a brief portion of the year; but it should not be forgotten that many of these grow naturally in a *loamy soil*, which every one will admit is more retentive of moisture than that in which we usually place them. And, again,—others that inhabit exposed localities, grow in mountainous districts, or even in the clefts of rocks, in which case their roots are supplied with moisture from the portions of rock which surround them, as these constantly retain a greater or less degree of it. Besides, who will attempt to argue that a plant, the roots of which are confined in a pot, and that pot, as well as the surface of the small portion of soil it contains, exposed to the full action or influence of the sun—is not more liable to injury from exhausting evaporation, than one in a situation where only the surface of the soil in which it is growing is exposed, and where it must likewise always receive some moisture by absorption from the sub-soil? No one, we feel assured, can for a moment entertain such an opinion, much less endeavour to support it. Therefore, admitting that certain species of this genus are found in those localities where they are occasionally subjected to a great degree of solar light and heat, and consequently of drought, we maintain that even in such situations they possess great advantages over those which are kept in our greenhouses, enjoying counteracting influences which the latter do not, and are thus enabled to endure the full blaze of a summer's sun. But it is notorious that the majority of them are met with in more or less shaded positions; and this proves that we are not deviating from nature's treatment in proposing an artificial shading for them in those purely artificial situations and unnatural circumstances under which they are here cultivated. Indeed, we confess that we should not scruple to depart from the precepts of nature, where, owing to the adventitious and foreign influences to which they are necessarily subjected, a system of treatment could be found more congenial to the habits of natural productions when under artificial cultivation; but where that system has not and cannot be ascertained, (which is the case with most, we do not say all plants,) we deem it advisable and expedient to adhere as strictly as possible to the course prescribed by nature; and when by experiment and investigation other systems are found to be more suitable, we shall willingly and gladly adopt them. We therefore again repeat, that every person who is desirous of making any advancement in the cultivation of heaths, should have them collected into one house, placed at a slight distance from the glass, and shaded from the scorching rays of the summer sun. By this latter mode of treatment, the plants will not only be preserved from sudden destruction by the fierce rays of the sun, but the generation of mildew, which is well known to prove so fatal to heaths, will be in a great measure prevented. Most practical writers on the subject of heath-culture, agree in ascribing the production of mildew on these plants to the effect of the too-powerful rays of the summer's sun; and it is recommended to place the more delicate sorts in a frame during the summer season, the lights of which are glazed with green glass; removing the latter entirely when the sun is not shining. This practice, however, is far more expensive, and certainly not more effectual, than that of shading the house in which the plants are kept, for the lights would be entirely useless in the winter season; the plants likewise would not be exhibited to advantage in such a situation; and we reiterate our opinion, that shading is not only a useful and important feature, but the most preferable mode that can be pursued, in the cultivation of heaths.

Passing on to the consideration of the effect of light on orange trees, we find ourselves involved in a curious and somewhat intricate inquiry. No person who has witnessed the orange houses of this country, which have been built for the professed and almost exclusive purpose of cultivating orange trees, but must have been impressed with the notion that these plants are impatient of light, and incapable of enduring a great degree of it. With massive walls of brick or stone, on the southern side of which a few windows are generally introduced, and the only other light that can be admitted being conveyed through the roof, which is certainly sometimes glazed, but elevated to an immense height; our orangeries have more the appearance of gloomy prisons, than repositories for plants. The general heavy character of these structures must appear the more extraordinary to the casual observer, from the circumstance of most cultivators exposing their plants to the open air during that period of the year in which solar light is the most powerful, and its action much more continued, and confining them in these dull and dark conservatories when light is so much mitigated from natural causes. These apparent discrepancies we must confess we are at a loss to reconcile, but there does appear to us to be a propriety in not subjecting orange trees to too great a degree of solar light, at all seasons of the year; though we think that most cultivators have erred in carrying this principle to the extreme in their construction of houses for the reception of these plants.

Where orange trees are cultivated solely for the production of fruit which can be applied to edible purposes, there can be little doubt that full exposure to light, at all periods of their growth, is a most important point to be attended to; but such is by no means the object of the cultivators of this country, and if it were, is not likely to be attained to an extent sufficient to compensate the grower. It is the appearance of the plants—both of the foliage and fruit, for which alone they can be esteemed in our collections; and to preserve the former in a healthy and luxuriant state, and at the same time to ensure a profusion of the latter, either too great or too limited a degree of solar light would not only be found injudicious but seriously prejudicial. Instead, therefore, of adopting either or both of these extremes, the latter of which, as before remarked, is the usual course pursued by cultivators, we consider that the object of the grower would be much more fully attained, were the houses intended for orange trees constructed so as to admit a greater degree of light, and the plants retained in them throughout the whole season. By these means the trees would be maintained in a constant state of luxuriance, without either becoming weak or sickly, (as they almost invariably do in a dark house,) or being subjected to injury by a sudden removal from a confined and partially shaded situation, to one in which they would be entirely exposed to the full action of the sun's rays. We are necessitated to reserve the consideration of the other tribes of plants (mentioned at the commencement of this article), with reference to the subject of light, for a future occasion, when we shall endeavour to pursue our inquiry in the same practical manner which has characterised the present and preceding essays, being fully convinced of the importance of avoiding all unnecessary allusions to abstract sciences, except so far as they enable us to illustrate or elucidate the subject more simply and intelligibly.

ON THE CULTURE OF PHAIUS ALBUS.

The treatment necessary to grow this extremely interesting orchidaceous plant to perfection being very peculiar, and a figure of it having appeared in our last number, a few remarks on its cultivation, as practised at Chatsworth, (where it has flowered beautifully in the present season,) may not be unacceptable to those of our readers who may happen to possess it, as well as to such of them who have not yet obtained it, and who feel interested in studying the peculiar habits of any portion of the singular tribe to which it belongs.

In offering a few brief observations on the cultivation of this lovely plant, it is requisite to enforce the imperative necessity of allowing it a proper and sufficient period of rest; for if the torpid stems are subjected to any stimulating heat, or induced to grow, before, by being kept in a cool house, their vital functions have been suspended for a sufficient length of time, and thus recruited and renovated, they will almost inevitably perish, as they will not endure the slightest forcing, nor can they under any circumstances whatever be excited into action with any degree of success before the proper season. The shoots which are produced in June and July, will reproduce shoots about the same period in the succeeding summer, and as soon as these latter are perfected, which will be about the month of November or December, those of the preceding year's growth will perish, leaving only the young stems of the present year; it will thus be perceived that the stems only last about eighteen months, which it is very important to bear in mind in cultivating this plant.

To enter, however, more particularly, into the treatment which this plant requires, we will commence with the management of it while in a torpid state, and follow it through its various stages, till it again arrives at the same period of its existence. When a plant of this species becomes dormant, which is known by its shedding its leaves, and by the formation of a brown incrustation or bark over the stems, which gives them the appearance of dead branches; it should be placed in a cool house, the temperature of which, throughout the winter season, should not be higher than 45° or 50° Fahrenheit; but should it unfortunately become torpid in the summer season, it is better to remove it at once to the *open air*, and allow it to remain in that situation until it naturally commences growing, for, as before remarked, this plant will not bear stimulating. After it has reposed, according to the ordinary course of nature, the proper time, it will begin to shoot from the base of the stems, and when the bud or young shoot is about half an inch in length, the plant should be re-potted into heath-soil, well drained at the bottom, and mingled with an abundance of finely broken potsherds, according to the usual method of potting orchidaceous plants. For a moderate-sized plant, the pot should be about six inches in diameter at the top, which will allow of its completing the annual growth without being again potted.

When the plant is thus potted, it should be placed in the orchidaceous house, in a humid atmosphere, and liberally watered at the roots; when these latter begin to form, the plant should be syringed once or twice in each day, continuing this practice until the young shoots exhibit their flowers, when syringing must be discontinued, but water should still be copiously supplied to the roots. Like most other orchidaceous plants, it requires to be well shaded during the growing season, and it may be observed that this species is especially liable to suffer if this particular is neglected.

As soon as the flowers expand, the plant may be removed into a cooler house, or drawing-room, for by this practice the flowers will frequently continue for three weeks, or even longer. At this stage of its growth, a greater degree of shading is necessary to preserve it in flower.

When the plant has ceased flowering, it should remain in a cool house, and be sparingly watered till the leaves begin to turn yellow, when it must be removed into a still cooler situation and kept moderately dry, in which state it may be preserved until it again commences growing in the following spring. Throughout the winter season, it is particularly necessary to guard against any accumulation of superfluous moisture about the roots, and only sufficient water should be applied to preserve the plant alive, taking care never to wet the stems.

The above sketch comprises the most important particulars of our treatment of this charming plant at Chatsworth, and we have hitherto experienced the most perfect success. This we attribute in a great measure to our having correctly ascertained the natural habits of this plant, and we have not the slightest doubt that the more information of this nature we are enabled to acquire relative to orchidaceæ generally, aided by scientific principles, and actual experience, the greater success and perfection will be attained in the cultivation of this splendid tribe.

NEW AND RARE PLANTS,

FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR JULY.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ).

COMPOSITÆ.

Centaurea depressa. Prostrate Centaury. A hardy species, with brilliant blue flowers, much resembling the common "corn blue-bottle" of this country, but far superior to it in the colour of its blossoms, and likewise less strong and vigorous in its habits. It is a native of dry, hilly places in Iberia, and seeds of it were communicated to the Glasgow Botanic Garden, by Dr. Fischer. It appears to thrive well in the open border, and blossoms in the month of August. *Bot. Mag.* 3662.

THE BINDWEED TRIBE (*Convolvulaceæ*).

Ipomœa bonariensis. Buenos Ayres Ipomœa. A beautiful new climbing species resembling *I. Horsfalliæ* in habit, but having pale purple-coloured flowers, and the whole plant being clothed with a downy pubescence. Seeds of it were introduced to this country by Mr. Tweedie, from Buenos Ayres, where it is stated by him to be common on ditch banks, and to possess naturally a large tuberous root. It is a stove species, of easy culture, and flowers about the month of August in this country. *Bot. Mag.* 3665.

THE FIGWORT TRIBE (*Scrophulariaceæ*).

Nemesia floribunda. Many-flowered Nemesia. An interesting little annual, growing from nine inches to a foot high, and producing an abundance of its pretty blossoms in the open ground from June to August. It grows nearly erect, is disposed to branch, the leaves are opposite and much serrated, and the flowers are of a very pale, bluish-white colour, with a deep yellow spot at the mouth. Requires the same treatment as the common hardy species of *Linaria*, to which this genus is nearly allied. *Bot. Reg.* 39.

THE MINT TRIBE (*Labiatæ*).

Salvia canescens. Hoary Sage. Seeds of this pretty herbaceous plant were transmitted to the gardens of the Horticultural Society, by Dr. Lebedour, of Dorpat, where it has been raised, and proves to be a hardy perennial. Its leaves are clothed with a whitish woolly substance, and the flowers are of a showy purple colour. It is found on rocks, in that part of the Caucasian chain which runs into the west of the Caspian Sea; hence it is a suitable plant for rock-work. Increases readily by seeds or cuttings, plants raised by the former method not flowering till the second season. The month of June is its usual time of flowering. *Bot. Reg.* 36.

THE CORN FLAG TRIBE (*Iridaceæ*).

Tritonia fucata. Painted Tritonia. Although this singular plant has been in the rich collection of the Hon. and Rev. W. Herbert for twenty-five years, it did not produce its flowers till the summer of 1837. In the preceding autumn that gentleman caused a quantity of manure to be placed over the spot in which the bulbs were growing, and to this circumstance alone he attributes the production of its flowers. These latter are of a bright scarlet colour on the upper side, while the lower segments of the corolla and the under side of the tube are yellow, striped with scarlet. It is a very showy species, perfectly hardy, and remains in flower nearly a month. May be increased with the greatest facility by separating the bulbs. *Bot. Reg.* 35.

THE LILY TRIBE (*Liliaceæ*).

Funckia Sieboldiana. Dr. Siebold's Funckia. Another interesting species for which this country is indebted to the celebrated Dr. Siebold, who discovered it in Japan, and introduced it from thence to the continental gardens, from whence it has been received into the Glasgow Botanic Garden and elsewhere. This species is by no means so good as *F. albo-marginata*, the flowers being paler and less showy. It has hitherto been kept in the greenhouse, where it flowers in July, but will probably prove quite hardy. *Bot. Mag.* 3663.

THE ORCHIS TRIBE (*Orchidaceæ*).

Phalænopsis amabile. The Indian Butterfly Plant. Dr. Lindley obtained the drawing of this lovely plant from Messrs. Rollison, Tooting, with whom it flowered a short time since, having been received by them from Manilla, through Mr. Cumming. It is noticed by Rumph, as growing in Amboyna, and he describes it as attaching itself to short, thick trees, covered with moss, up which it turns like a rope, and from which it hangs down in entangled tufts. It thrives best when fastened to a small block of wood, covering the roots with moss, and suspending it from the roof of the orchidaceous house. It appears very difficult to propagate. *Bot. Reg.* 34.

Epidendrum viridi-purpureum. Purplish-green Epidendrum. A new and certainly not an uninteresting species, imported from Jamaica by Mr. Horsfall, of Liverpool, in whose collection it was first brought into flower. The pretty purple blotch on the labellum of this species gives it a rather attractive appearance, otherwise the flowers are of a dull-green colour, the sepals being tipped with brown, and of the usual character of many other species of this genus. *Bot. Mag.* 3666.

NOTICES OF NEW AND RARE PLANTS

IN FLOWER IN THE PRINCIPAL NURSERIES IN THE VICINITY OF LONDON.

MESSRS. HENDERSON'S, Pine Apple Place. *Siphocampylus bicolor.* A fine specimen of this very interesting plant is now flowering profusely in the greenhouse of this nursery. It has previously been figured and described in this work, and we have only now to notice an excellent feature in its character, which is, that it continues flowering in almost constant succession for several months. *Lophospermum scandens.* This pretty new species is also beautifully in flower in the greenhouse of these gentlemen, and deserves extensive notice and cultivation. It appears to be a remarkably free-flowering plant, an abundance of flowers being produced when only two feet high. *Pentstemon Cobœa.* The large and handsome blossoms of this beautiful plant constitute it the finest species of this genus at present known in our collections, and it is much to be regretted that such great difficulty is experienced in propagating it, and preserving it through the winter. It is now in flower in the above nursery, and the flowers are full an inch across at the mouth; but it is remarkable how they vary in colour, as in the present instance they are nearly white, while we have sometimes seen them of a deep pink colour. Undoubtedly soil and situation must exercise a material influence in effecting these changes, and it is most probable that light is the principal agent.

MR. KNIGHT'S, Chelsea. *Oncidium Lanceanum.* Two specimens of this splendid and delightfully fragrant species are now exhibiting their lovely blossoms in the orchidaceous house of this gentleman. This is, without doubt, one of the most beautiful of orchidaceous plants, and beside the richness and diversity of the colours of its flowers, the shortness and boldness of the spikes on which they are produced is a valuable feature in its character, as the flowers are thus brought nearer to each other, and their combined beauty rendered more conspicuous. *Aspasia epidendroides.* This is a very neat and interesting little orchidaceous plant, with flowers containing a great variety of showy colours, and much resembling those of *A. variegata.* It is now flowering at this nursery, and should be in the collection of every lover of orchidaceæ. *Drymonia bicolor.* This fine stove climbing plant is again in flower at the above nursery. It is a species of considerable merit, as it grows rapidly and flowers very profusely: the flowers, though not remarkable for showy colours, are highly interesting and ornamental.

MESSRS. LODDIGES, Hackney. *Maxillaria stapelioides.* This is an excellent and truly ornamental little plant, the flowers of which, as its name implies, bear a striking resemblance to some of the species of *Stapelia.* They are produced in very great profusion, and when a number of them are expanded, (which is at present the case in the collection of these gentlemen,) the plant has a most interesting appearance. The leaves are pale green, and the flowers are likewise of a green-coloured ground, but most profusely and beautifully spotted and marked with purple. *Maxillaria graminea.* This is another pretty species of the genus

Maxillaria, with very narrow grass-like foliage, and small but neat blossoms of a dull yellow colour, which are prettily striped with brown. It is now in flower at this nursery. *Phaius albus* is also flowering in a high state of perfection, and no collection of orchidaceous plants should be destitute of this most interesting and valuable species. The same may be said of *Miltonia spectabilis*, which is likewise exhibiting its charming flowers in the collection of these gentlemen. They have, besides, a very fine variety of *Oncidium luridum* now in flower, the leaves of which are larger and more luxuriant than any we ever before witnessed, and the flowers are much larger than usual. A new and very singular orchidaceous plant, which these gentlemen have received from Manilla, is now flowering most profusely. It very much resembles the species of *Bletia* in general appearance, the flowers being also of a pink colour, but it is destitute of a labellum, or at least the labellum is composed of one of the petals, and it will form a new and distinct genus, which has not yet received a name.

Mr. Low's, Clapton. *Fuchsia fulgens.* This is a Mexican species of very recent introduction, and of a most extraordinary character. The rapidity of its growth, the immense size of its leaves, (many of which are three inches across,) the great length and brilliant colour of its flowers, and the tuberous nature of its root, constitute it an entirely new feature in the genus *Fuchsia*, and strongly recommend it to every cultivator. A large specimen of it is now producing its splendid flowers in the above nursery from the extremity of the leading shoot, and if the lateral shoots could be brought into flower at the same time (which appears highly probable) it would be a most magnificent object. *Helichrysum macranthum.* This interesting new species is now flowering in the open ground, at the nursery abovenamed, and is entitled to a place in every collection; though it appears necessary that it should be well cultivated, in order to produce its delicate blossoms of the large size for which they are remarkable. A very fine specimen of *Loasa lateritia* is now completely covered with its pretty red blossoms, and forms a most attractive ornament to the show-house of this nursery.

Messrs. Rollison's, Tooting. *Renanthera coccinea.* This, though a comparatively old plant, has very rarely flowered in this country; but, owing to some peculiar treatment, or perhaps to the great age of many specimens, it has been recently induced to flower in several collections. An extraordinarily large plant of it is now producing five fine spikes of flowers in the orchidaceous house of these gentlemen, and as nearly all the flowers are expanded at once, the effect produced is truly splendid. *Epidendrum ionosmum.* A species not very remarkable for beauty, but by no means destitute of interest in this respect, and emitting such an agreeable fragrance that Dr. Lindley observes of it, that the western world wants no violets where this species is found. It has been in flower a considerable time at this nursery, and its dark-brown blossoms still remain expanded. *Phalænopsis amabile* is again in flower, as also is *Cyrtochilum maculatum*, and a very handsome plant of *Oncidium pulchellum*, which latter is one of the prettiest species of the genus *Oncidium.* These gentlemen have recently received a quantity of orchidaceous plants from China and Demerara; among those of the former importation are some new and very curious specimens, many of which have already commenced growing.

Mr. Young's, Epsom. *Nuttallia grandiflora.* A very interesting and ornamental new herbaceous plant, with digitate leaves, and brilliant rosy purple-coloured blossoms. It is far superior to *N. cordata*, both in the size and colour of its flowers, and will no doubt be found sufficiently hardy for the flower-garden or border, if planted in a sheltered situation; though it would have a very pretty appearance if kept in a pot. It is now flowering very abundantly at this nursery in the open ground. *Ruella elegans.* This is, we believe, a new stove species, of dwarf habits, and producing a great number of elegant little blossoms, which are of a most lively and intense blue colour. It is a highly interesting plant, and well worthy of the cultivator's esteem, particularly as it appears to flower in almost constant succession. *Hippeastrum ambiguum longiflorum.* This is a most splendid variety, with flowers of an immense size and length, which are of a cream-coloured ground, beautifully streaked with crimson. It is flowering in great perfection in the greenhouse of this gentleman.

NOTICES ON THE CULTURE OF NEW AND RARE PLANTS

IN THE PRINCIPAL NURSERIES IN THE VICINITY OF LONDON.

On the treatment of Tropæolum tricolorum.

This extremely interesting and deservedly esteemed plant, which among greenhouse climbing plants has few equals, either for the striking beauty of its flowers or the great profusion in which they are produced, is remarkable for having such very weak and slender stems; and though these characters impart to it a great degree of gracefulness and elegance, there can be little doubt that any system of treatment which would induce the stems to grow stronger and larger, would also render the flowers much superior, and, in short, would cause the whole plant to assume a different and more luxuriant character. Convinced of the propriety and force of this deduction, we shall now lay before our readers a very simple method which we have recently seen practised in the collection of Mr. Knight, Chelsea, and which we consider will be found effectual in ameliorating this plant, and rendering it an object of still greater attraction and interest.

It is an acknowledged principle among florists and others, that whatever tends to increase the size and strength of a bulb, must materially render the flowers produced in the succeeding season superior in every respect. To carry this principle into effect with the present plant, instead of plunging the bulbs to the depth of an inch or more in the soil, they are placed so near the surface as to leave all the upper portion of them exposed, and the soil is only allowed to cover the roots and the base of the bulb. The effects produced by such treatment are obvious and extraordinary; and though we are at a loss to account for such results, or to explain the agency by which they are effected, we cannot but see and admire the effects themselves.

No sooner is this system adopted, and the plants commence growing, than the bulbs swell and enlarge in a truly astonishing manner, and by the time their growth is completed, they have attained to a very large size. Of course, during the season in which this experiment is being tried, the plants do not flower so abundantly, nor do they maintain a healthy appearance, which is doubtless caused by the bulbs being so much exposed to solar light, and this deficiency of luxuriance may in part account for the concentration of a greater quantity of nutriment in the bulb, and consequently for its great increase in size. But this unhealthy appearance of the plants, being only of one year's duration, is unworthy of any consideration; and although the result of the experiment with regard to a future year is not at present ascertained, there can be little question that the bulbs, by being so much stronger, and containing so much more nutriment, will produce finer and better flowers in the following seasons. This method is doubtless equally useful with *T. brachyceras*, and others of slender habits; and with young and small bulbs it is unquestionably of great utility; we therefore recommend it with confidence to our readers, feeling assured that, by practising it for one or more years, these plants may be greatly improved.

Another system of growing the species of *Tropæolum* to greater perfection has likewise recently fallen beneath our notice in our metropolitan tours. These plants, it is well known, do not require to be planted in very large pots, as their roots are neither very numerous, nor do they extend themselves to a great distance from the bulb; still, if they are not placed in pots of a large size, or at least in larger pots than from their size they absolutely require, the heat of the sun penetrates the pots to such a degree, as to cause the leaves to assume a yellow and sickly hue; and in such cases the plants are not only deprived of the beauty of their foliage, and rendered unsightly in this respect, but they never produce their flowers in perfection. This is particularly the case with young or newly-imported bulbs of *Tropæolum;* and to obviate it, many cultivators have recourse to the contrary extreme of placing them in much larger pots than are necessary, by which means, besides the waste of soil, the plants frequently become saturated with water, and the soil is rendered what is usually termed "sour," the consequence of which is, that the plants are equally as much injured as those which suffer from drought, and in many cases much more so. A rather novel method has therefore been suggested, which has been found fully efficient for maintaining the desired medium. It is, to place the pots containing the plants in others of a larger size, filling up the space between the two with river-sand, which is kept constantly watered, and imparts a coolness and moisture to the soil in which the plant is growing, which renders the application of water to its surface almost unnecessary. The only objection to this system is, that it employs two pots instead of one; but where pots can conveniently be spared for this purpose, the practice will doubtless be found of great utility, and deserves to be generally adopted. We saw this plan in operation in the nursery of Messrs. Low and Co., Clapton, from whence we collected the above hints, which, it is hoped, will prove serviceable to our readers in cultivating the various species of this very ornamental genus.

OPERATIONS FOR AUGUST.

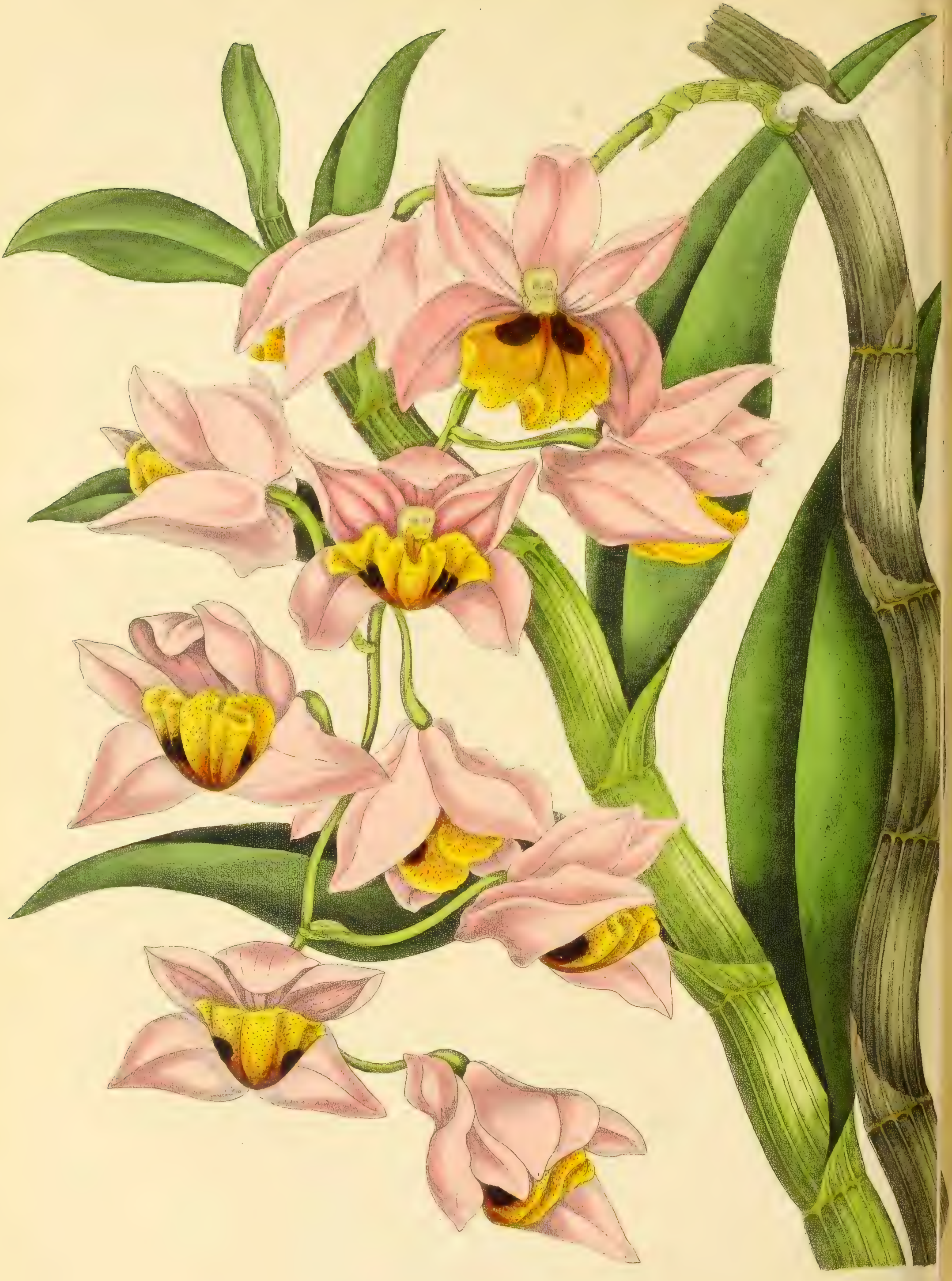
As this and the succeeding month are well known to be the period in which the farmer takes advantage of every fine day which occurs for the purpose of storing his grain; and as the sciences of agriculture and horticulture are perfectly analogous, and the operations they inculcate differ chiefly in extent; the attention of the gardener will in like manner be now requisite to every plant which may be producing seed, and which he may wish to preserve, in order to perpetuate the species in a future season by this means. To procure good seed from any plant, it is important that each individual seed-pod (excepting of course those which are very small and minute) should be plucked from the plant as soon as it is sufficiently ripened, and before it has been allowed to burst, drying it carefully on paper, and afterwards rubbing out the seed, to be stored in drawers during the winter. This process may appear troublesome to some, as we know that most cultivators leave the plants which are intended to produce seed in the ground till the greater part of it is ripe, and then pull up the whole plant, and suspend it in an airy shed to dry. We cannot too severely censure this practice; for in the first place, the seed which ripens first, and which is almost invariably the best, is by this method usually scattered in the ground, while the remaining portion is becoming ripe; and next, that which is left being suspended in any place to dry, the ripest and best seeds of most kinds fall out and are lost, and nothing remains but the weakest and that which is only half ripened, which never produces good plants, and frequently does not vegetate at all. These remarks may appear trivial and unimportant, but we feel assured that the beauty and interest of the plants in every department of floriculture, (at least of that portion of them which is reproduced by seed,) depend in a very great degree upon the manner in which the seed is collected and conserved; and we are also convinced that cultivators would be amply compensated for the little trouble that might be bestowed in gathering the pods singly at the precise period of their maturity, by the great superiority of the flowers produced. To establish this position, we need only refer to the seeds (we allude more particularly to *flower* seeds) procured from the shops of seedsmen and others, the smaller and more minute kinds of which are frequently more than half of them abortive, so that out of a small packet of seeds very few plants are obtained. In almost every case where this occurs, it would not be difficult to prove that it is entirely owing to the grower desiring to accumulate so great a quantity of seed that he is compelled to allow the plants to remain till the greater part of the seed is ripe, and then to pull them up entirely, thus losing the first and best seeds, and mingling with the others those which are insufficiently matured. The above observations apply to every description of plants the seed of which may be desired; and we shall now briefly detail a few of the principal operations which require to be performed in each of the particular departments of floriculture during the present month.

Fire-heat, if suspended in the orchidaceous house during the last two months, must now be again applied during the night, and the quantity of water administered to orchidaceous plants in any form should be greatly diminished. The house should still be shaded when necessary, but the material used for this purpose may be of a thinner and lighter description, and towards the end of the month may be dispensed with altogether, except when the sun shines very fiercely.

In the stove, air should be admitted by all practicable means when the weather will permit, as it is of the utmost importance that the wood of stove plants should be properly matured and hardened, now that the greater number of them have ceased growing. Attention should now be paid to the extirpation of all insects, particularly of such as can be destroyed with water (as the red spider); for which purpose the plants should be syringed in the most vigorous manner possible, provided the leaves are not injured. This is more especially necessary at this season, as such means cannot be resorted to in the winter months. Continue to propagate any desirable sorts.

Greenhouse plants, like those which are cultivated in the stove, cannot have too much air admitted to them this month, and care should be taken to ensure to each individual plant a free circulation of it, by keeping them at a sufficient distance from each other. Any species of which an increase may be wished for, and which has not previously been effected, should be immediately attended to, and cuttings put in without further delay, as it is important that the young plants should be well rooted and established before the commencement of the winter. *Pelargoniums* should now be abundantly propagated, and otherwise treated as directed last month. Annuals should be sown in pots, to flower in October and November.

In the flower-garden, besides the attention necessary to the timely and careful collection of seeds, before alluded to, another and equally important subject demands consideration this month. All half-hardy plants, such as *Petunias*, *Verbenas*, &c., that require protection during the winter, may be propagated during this and the following month. It is advisable, however, to commence this operation as soon as possible, and continue it as the shoots become ready, for the plants which are struck this month will be better rooted, stronger, and less liable to damp off in the winter, than those raised at a subsequent period. It is better to strike them in a gentle heat for the purpose of facilitating the success of the operation, but as soon as they are potted they should be gradually exposed to the open air, that they may not become too weak and slender. The shoots, and likewise the flowers of *Dahlias*, may be thinned out as they appear, which will render the remaining flowers much larger and finer.



Dendrobium Gibsonii.

DENDROBIUM GIBSONII.

(MR. GIBSON'S DENDROBIUM.)

CLASS.	ORDER.
GYNANDRIA.	MONANDRIA.

NATURAL ORDER.
ORCHIDACEÆ.

Generic Character.—See vol. iii. p. 77.

Specific Character.—*Plant* a stove Epiphyte, with pendulous, round, jointed, tapering stems. *Leaves* ovate-lanceolate, acute. *Racemes* lateral, many-flowered, twice the length of the leaves. *Bracteas* ovate, situated at the base of the pedicels. *Sepals* broadly ovate, obtuse. *Petals* slightly cucullate, deep orange. *Labellum* expansive, very broad, fringed and undulated at the margin, with two dark purple spots on the upper part.

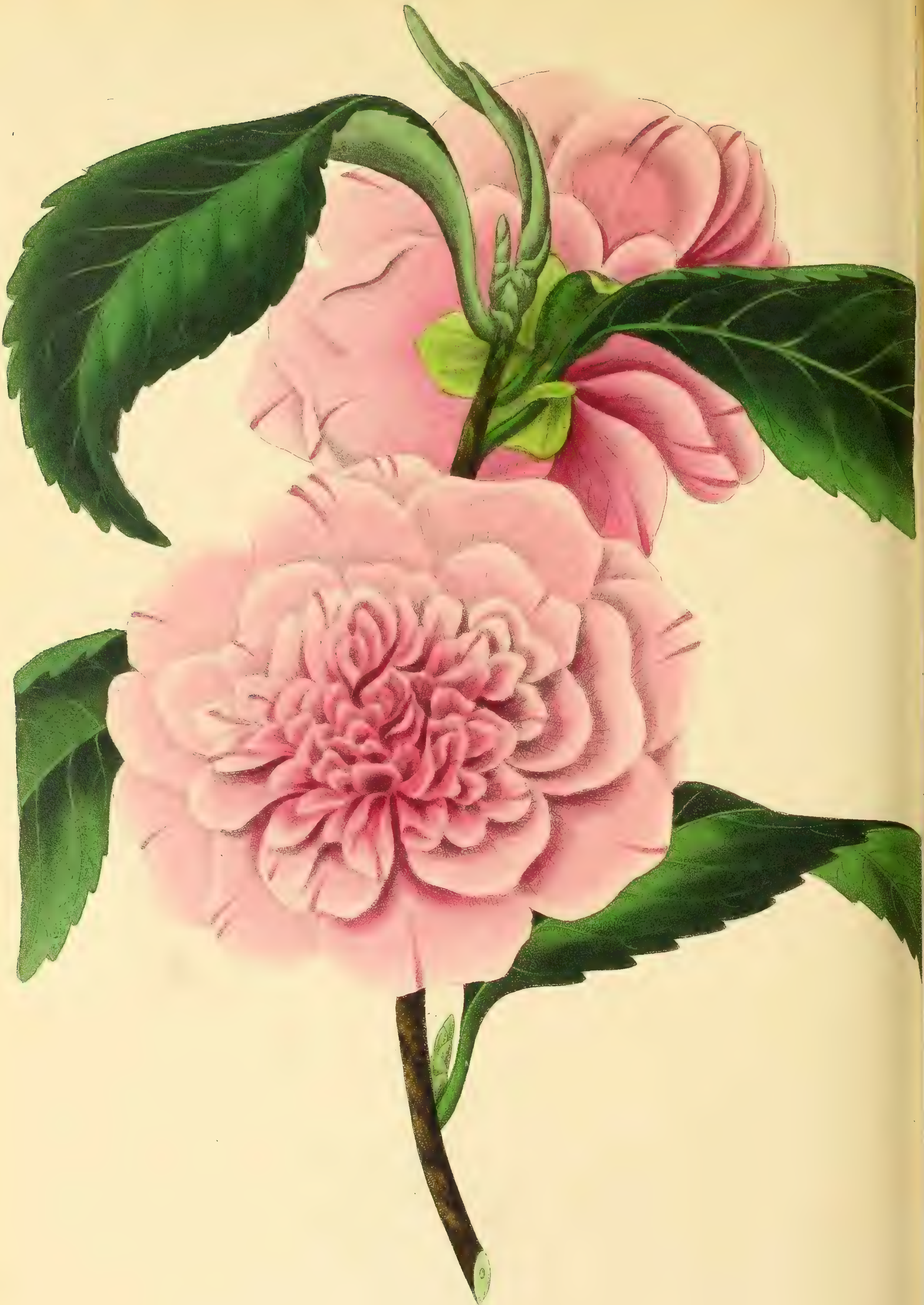
No genus of orchidaceous plants contributes more to the gaiety of the stove than *Dendrobium ;* and perhaps if the species are viewed collectively, it may be considered as a group of plants unrivalled in beauty. Through the zeal and liberality of his Grace the Duke of Devonshire in furnishing a mission to India, we are enabled to bring into notice a new and highly-beautiful species of this genus, which was introduced to Chatsworth in 1837 by Mr. J. Gibson, his Grace's collector, having been discovered by him on the Khoseea Hills, in India.

It is scarcely surpassed in point of real beauty and ornament by any other species of the splendid genus. The rich orange-coloured flowers, gracefully depending from the almost leafless stem, and produced in astonishing profusion, rendered striking by the two large and almost black spots on their delicately-fringed labellum, have a most enchanting appearance when expanded, and enliven the orchidaceous house for a considerable time. The flowers are produced in long racemes, each bearing from ten to fifteen of them, and are somewhat similar to those of *D. chrysanthum*, but of a much deeper orange colour. These two species differ also in the mode of flowering, the flowers of *D. chrysanthum* being produced in pairs along the sides of the stems, while those of the one here figured appear in racemes.

Mr. Gibson states, that he first saw it in flower in India at the door of one of the natives' huts, and was so much attracted by its appearance, although at a considerable distance from it, that he was induced to hasten immediately to the spot, when, upon examination, he found that he had previously collected specimens of it. After making some inquiries with respect to its usual locality, he was directed to a place in the neighbourhood; upon arriving at which, he discovered that the same spot had been previously visited by him, and did not succeed in obtaining another specimen. It is somewhat remarkable that it never afterwards came under his observation, a circumstance which tends to prove the extreme partiality of orchidaceous plants to peculiar localities.

It was found growing upon rocks, at an elevation of about three thousand feet, so situated that, during the rainy season, water, in its course down the mountains, washes completely over the tops of the plants. This fact should not be lost sight of in its cultivation, as it shows the propriety of frequently syringing the plant while in a growing state, in addition to the usual practice of keeping the atmosphere of the house in a state of humidity. We refer the reader to page 121 of the present volume of this Magazine for an outline of the principles on which its cultivation should be conducted, which is there given with reference to *D. densiflorum*, but is equally applicable to the present species.

Our drawing was made from a plant which flowered most profusely in his Grace the Duke of Devonshire's extensive collection at Chatsworth, and it has been named after Mr. Gibson, collector to his Grace, by whom it was first discovered and introduced.



Camellia Passii rosea.

CAMELLIA PRESSII ROSEA.

(PRESS'S DOUBLE ROSE-COLOURED CAMELLIA.)

CLASS.
MONADELPHIA.

ORDER.
POLYANDRIA.

NATURAL ORDER.
CAMELLIACEÆ.

GENERIC CHARACTER.—See vol. iii. p. 101.

C. Pressii rosea.—A garden variety, with rich, rose-coloured, double flowers, the petals of which are sparingly striped with red, and irregularly disposed.

NOTHING can be more gratifying to the friends of horticultural science, than to take a retrospective glance at the rapid advances which have been made in its different departments during the present century, and in no respect are these more apparent than in the numberless splendid varieties of different kinds of plants which are continually being raised. Many of these productions, however, are exceedingly fugitive, sharing the popular favour only for a brief period, and then being at once consigned to oblivion, because superseded by others of a superior character. This is by no means the case with the varieties of *Camellia*, which, being comparatively limited, and of an arboreous nature, if they possess any distinguished features, may be regarded as permanently valuable, and will probably be allowed a situation in good collections for centuries to come.

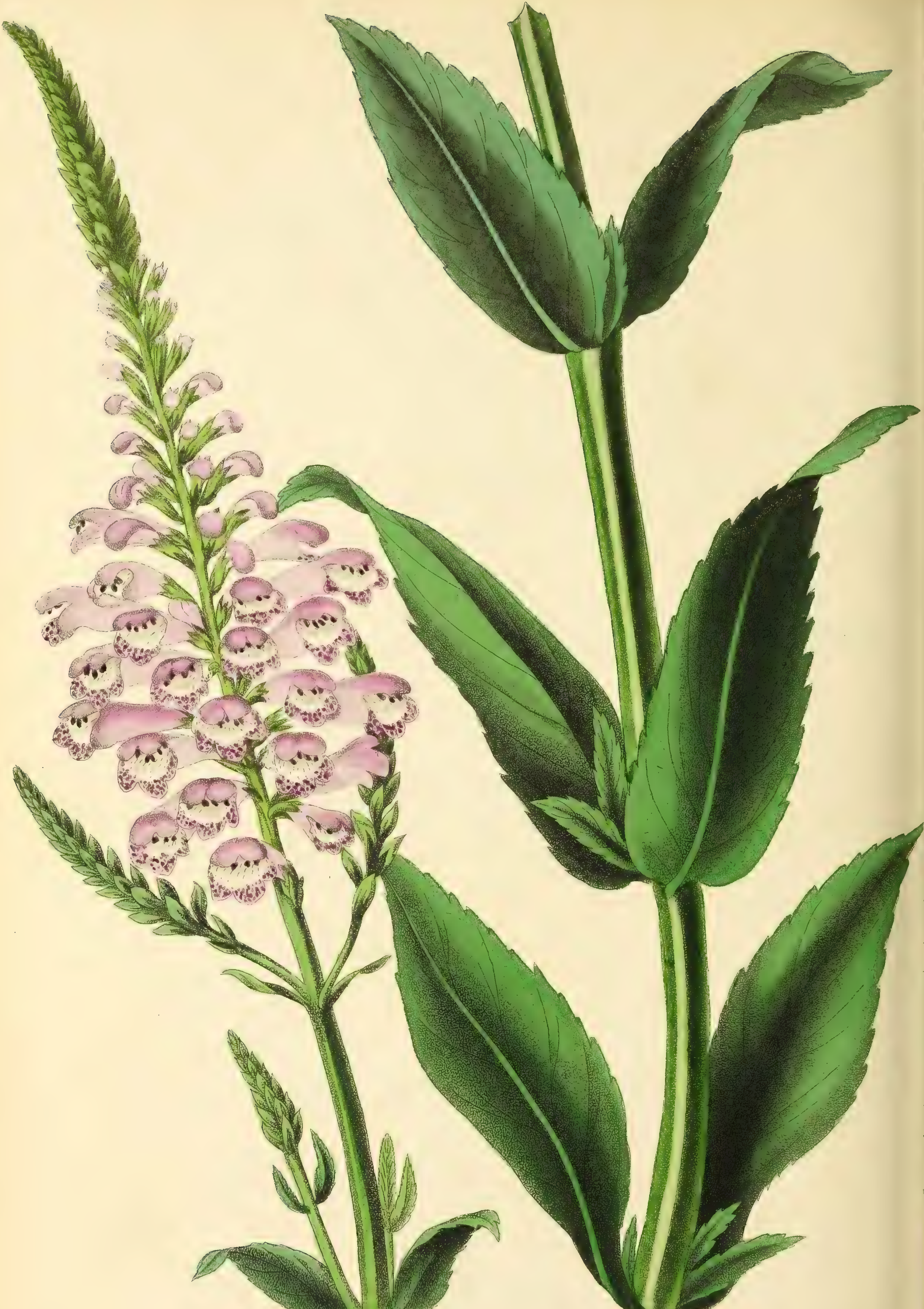
Some Camellias are remarkable for the perfect symmetry of the form of their flowers, outrivalling in this respect the choicest works of art; the flowers of others are pleasing on account of the beautifully-irregular disposition of their petals, which lovely negligence accords more with our usual ideas of genuine natural productions. Of this latter description is the splendid variety represented in the accompanying plate, of the history of which we are unable to state anything further than that Messrs. Young of Epsom received it from the Continent last year, with the name above given, and we presume that it is a hybrid production from seeds of *C. Pressii.*

Full particulars relative to the culture of this beautiful genus will be found in former volumes of this magazine, and some remarks on the influence of light upon these plants may be seen in another page of the present Number. To the latter we refer the reader for our views on this important subject; a subject which is, we believe, seldom considered by cultivators, and certainly has never received the attention it demands, but one which most materially concerns these and all other plants, and an acquaintance with which is indispensable to their superior cultivation.

Those persons who possess a greenhouse or conservatory of a sufficient height, will find their *Camellias* much benefited by being planted out in the bed or border of the house, for by this treatment the plants never suffer from want of water, and are rendered infinitely superior in every respect to those grown in pots. It is better, however, to allow them to attain a moderate size (three to four feet high, and bushy in proportion) before they are thus planted, otherwise, if planted too young, they would grow too luxuriant and straggling, and be a much longer time before they flowered.

The drawing of this handsome variety was obtained at the nursery of Messrs. Young, Epsom, in the month of April in the present year, the plant flowering when little more than a foot high.

It is worthy of remark, as an incitement to British horticulturists to greater industry in raising new varieties of this magnificent genus, that in some of the Continental gardens more than two hundred distinct and beautiful varieties are cultivated.



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Physostegia imbricata.

PHYSOSTEGIA IMBRICATA.

(IMBRICATED PHYSOSTEGIA.)

CLASS.	ORDER.
DIDYNAMIA.	GYMNOSPERMIA.

NATURAL ORDER.

LABIATÆ.

Generic Character.—*Calyx* tubular when the flower is expanded, inflated after florescence, with about ten obscure veins, either with five nearly equal teeth, or truncate and scarcely dentate. *Corolla* tubular, much exserted, inflated at the mouth; limb of two parts, upper lip nearly erect, partially concave, entire or emarginate, lower one spreading, trifid, lobes rounded, the middle one frequently emarginate. *Stamens* four, those in the upper lip ascending, lower ones very conspicuous. *Anthers* approximate, two-celled; cells parallel, distinct, open. *Style* bifid at the summit, lobes subulate, crowned with stigmas. Achenium dry, smooth.

Specific Character.—*Plant* an herbaceous perennial. *Stems* erect, slightly branched, quadrangular, nearly smooth. *Leaves* opposite, sessile, oblongo-lanceolate, acute, serrated. *Flowers* terminal spicate, imbricated in æstivatum, generally in pairs. *Corolla* pink, two-lipped; upper lip bifid, lower one of three lobes, spotted with red internally. *Calyx* usually five-parted, segments acute, nearly equal.

Among the innumerable variations in character of plants and vegetables, all of which are in some degree interesting and valuable, and contribute more or less to our sustenance or delight, there is no class of plants the members of which so closely resemble each other in habit, or are more extensively cultivated, and universally admired, than that large family which comes within the appellation of "hardy herbaceous plants." In the small plot of ground cultivated by the peasant or cottager, as well as in the magnificent and ornamental flower-gardens of the gentleman or nobleman, we invariably find some plants of this description; and even if we walk abroad into our fields and woods, we shall observe no lack of the beautiful and valuable subjects of this class.

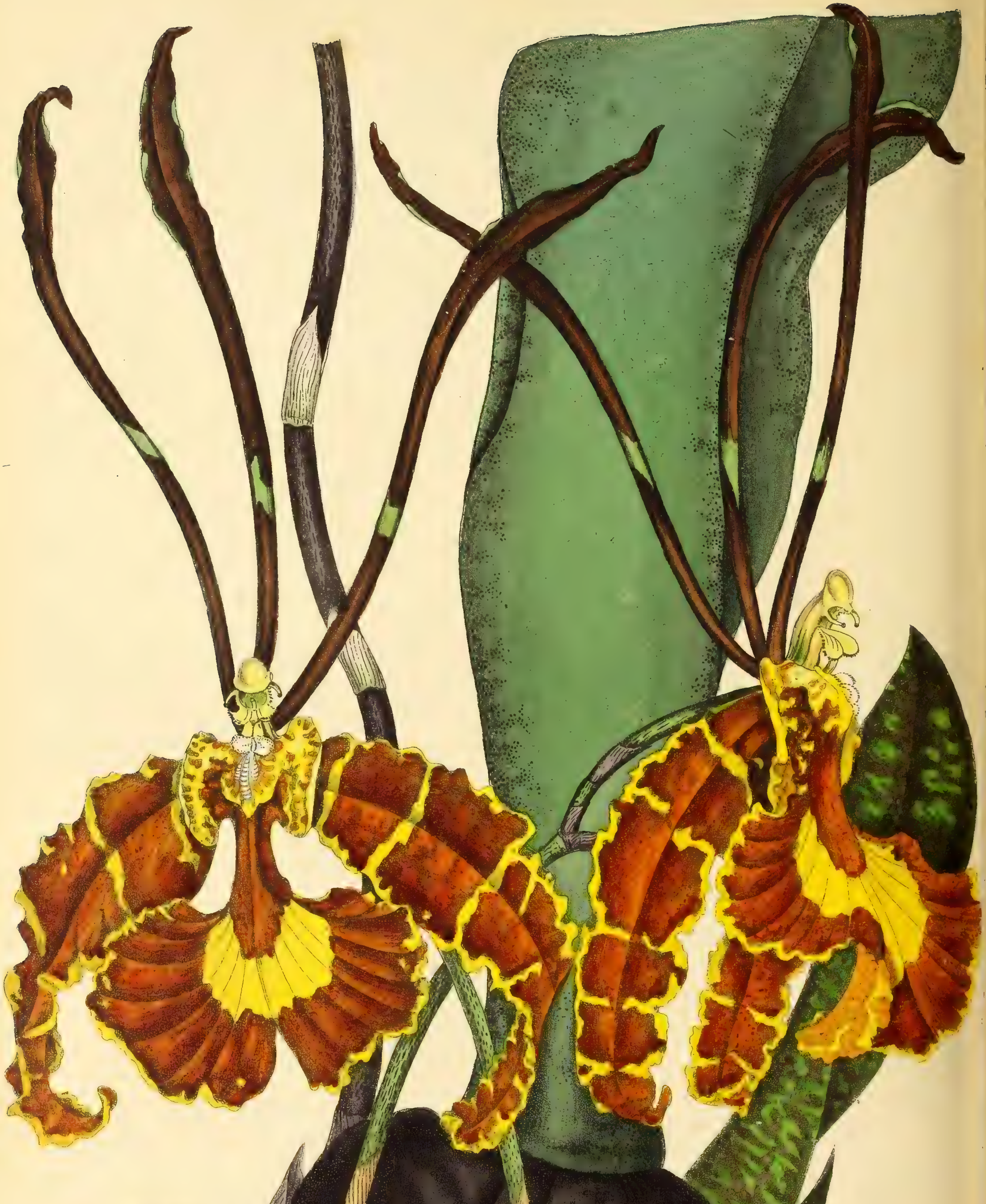
These plants are cultivated with so little trouble, and adorn our flower-beds and borders with such an extensive and pleasing variety of their delightful blossoms, as well as furnish us with some attractive feature at almost all seasons of the year, that they are more universally cultivated than those of any other description or habits in the whole vegetable kingdom; but though they are so numerous and varied, any addition to our previous stock requires only to be known as a plant worthy of cultivation, to be at once brought into extensive notice, and eagerly sought after by all persons possessing a flower-garden or border.

The subject of our present figure is a plant of no inconsiderable merit, and every person who possesses any acquaintance with the bold and showy species comprised in the genus *Dracocephalum*, will at once detect a striking resemblance to them in the present plant. Indeed the genus of which this plant is a member, is very closely allied to that above adverted to, and few individuals, except practised botanists, would observe any material distinction. The chief point of difference is, that in the genus *Physostegia*, the calyx is inflated after the flowers have faded.

Our figure differs so materially from that given in the *Bot. Mag.* p. 3386, that we were inclined to consider this plant must be the *P. truncali;* but on a further examination, sufficient identity may be found in its habits and mode of inflorescence to induce us to publish it under this name. It is, we believe, percectly hardy; but a few plants kept in pots in the greenhouse will have a very good effect. It may be propagated by seeds or offsets.

This is another of the elegant plants for a drawing of which we are indebted to Messrs. Young of the Epsom nursery, from which establishment our figure was taken in October 1837, and whence plants of it may be obtained.

The generic name is taken from *physa*, a bladder, and *stege*, a covering, alluding to the bladder-like nature of the calyx.



Sept 1 1838

Oncidium papilio.

ONCIDIUM PAPILIO.

(BUTTERFLY-PLANT.)

CLASS.
GYNANDRIA.

ORDER.
MONANDRIA.

NATURAL ORDER.
ORCHIDACEÆ.

Generic Character.—See vol. iv. p. 77.

Specific Character.—*Plant* an Epiphyte. *Leaves* solitary, oval, dark green, with numerous irregular brown spots. *Scape* articulated, two-edged, few-flowered ; upper sepals longest, linear ; lower ones distinct, ovate-lanceolate, undulated at the margins. *Column* two-horned, otherwise fimbriated.

In almost every tribe of plants there are some species which attract universal attention, while others are either wholly overlooked or regarded with comparatively little interest. Amongst orchidaceous plants there are few which have been more generally admired, or have become greater favourites, than the beautiful species of which a drawing is here given.

With little of the striking magnificence for which some of the members of this charming tribe are remarkable, there is something so pleasing and interesting in *Oncidium papilio*, that it never fails to engage the eye of every lover of plants, and elicit the warmest admiration and delight. It is difficult to state in what particular part of the plant the attraction resides, since every feature is more or less intrinsically interesting. Its handsomely-maculated and mottled foliage, its slender, wiry stem, waving gracefully with the slightest agitation of the atmosphere, and surmounted by what might readily be mistaken for an elegant ephemera, till the observer, in his eagerness to possess himself of so beauteous a novelty, discovers that it is attached to the plant, constituting indeed its flower, and playfully upbraids nature for the formation of objects so very illusory, conjoined with the fact, that the flowers are produced in such rapid succession that the plant is seldom unornamented by them, will in some measure account for the high and extensive favour it has obtained.

No orchidaceous plant is more easily cultivated. Placed in a moderate-sized pot, in a mixture of heath-soil and potsherds, it requires no other attention than shifting once a year, and carefully administering water to its roots, or occasionally over the leaves. With regard to heat, it is likewise very accommodating, since it will thrive in either a high or a low temperature, with a due modification of the quantity of water administered according to either of these circumstances. We have not the slightest doubt that this species might be grown successfully even in a greenhouse, provided that the atmosphere could be maintained in a trifling state of humidity during the summer season, as we have seen plants of it flourishing in extraordinary luxuriance when kept in a house with a temperature very little above that of the greenhouse. It is certain that it would thrive in a lower temperature than is usually supplied to our orchidaceous houses, and this renders it available for those gardens where a sufficient degree of heat cannot be commanded for cultivating most other orchidaceæ.

Plants of it may be purchased for a trifling sum of any nurserymen who cultivate this beautiful tribe; and we would recommend all who have any taste for those flowers in which the curious and the beautiful are combined, to obtain this most interesting species, even though they may not possess a collection of other orchidaceous plants.

It was first introduced to this country by his Excellency Sir Ralph Woodford, Governor of Trinidad, in 1825; and of its most appropriate specific appellation Dr. Lindley observes (*Bot. Reg.* 910), "The name has doubtless been suggested by the brilliant colours of the flower, its singular form, which may be easily likened to the wings, body, antennæ, and tongue, of a butterfly, and its fluttering motion when hanging from its stalk, at the extremity of the weak, elastic, jointed scape."

ON AN IMPROVED KIND OF FLOWER-POT.

Having employed with success an improved form of garden-pot, I am induced to recommend it to your readers, being perfectly convinced of its superiority for growing plants in the conservatory and hothouse. The invention which I have tried, and now recommend, consists of a double pot in the form of one pot inside another, joined at the bottom, so as to allow a hole for drainage, but leaving a space all round between the sides, of an inch or less in width, to be filled with water, or moss saturated with water, according to the nature of the plant potted.

In the usual method of potting, water cannot be supplied gradually and moderately as nature supplies it, owing to the rapid evaporation caused by the porous and absorbing material of the pot, and also by the atmosphere, generally highly heated, acting on a large surface of it; so that watering must be sudden and copious. Yet the most essential roots, those close on the surface of the mould, are exposed to be rapidly dried and destroyed, and the pot itself not only abstracts the moisture from the soil, but also from the greater part of the roots. By the practice of placing pots in some cases in pans of water, the lower roots only are benefited, but the air is excluded from them, and they are the least adapted for elaborating sap, on account of their distance from the light and air.

By the construction which I suggest, and have tried, the plant seldom requires watering, except by syringing over the leaves, as the water is supplied to the plant by filtering through the inner pot gradually and constantly, at a due temperature, and in proportion to the necessities of the plant: drainage is not impeded, and the imperceptible steam arising from the surface of the water, may either be allowed to nourish the leaves of the plant, and maintain the elasticity of the air in the house, or by covering the interval between the two pots, it can be retained to raise the temperature of the water. Pots thus constructed, and placed on a common smoke flue, combine the advantages of the hot-water apparatus with the facility of heating by the common flue. If supplied with water at 65°, they retain the temperature without allowing the plant to be exhausted by the highly heated atmosphere, and obviate the incumbrance of a pit, if arranged on shelves near the glass; they likewise furnish immediate means for supplying a nourishing bottom-heat to plants, are easily attended to, cause no litter, and if the external pot be painted of a light stone colour, they make a very neat appearance.

There are plants of course to which this method is inapplicable, but to many it ensures an indispensable means of obtaining healthy luxuriance. It is well adapted to Hydrangeas, Lobelias, potted Cucumber plants, Pines (not fruiting), Cockscombs, Gloxinias, &c., and to cuttings it supplies a gradual moisture highly favourable for causing them to strike.

In my experiments I employed two flower-pots, one inside the other, joined at the bottom by Roman cement, leaving a large drainage hole in the centre. I recommend your readers to make the trial, and its success will, I am sure, lead to the construction of pots of this proposed form. If it be desirable to confine the steam between the pots, a circular flat strip of zinc, cut through at one side, can be moved up, and closed over the rims.

I need not add, that, by having the rim of the internal pot lower than that of the outside one, an excellent small tank will be formed for raising Lotus seeds, and delicate aquatic plants. *Communicated by Mr. James E. Carolan, Gardener to the Marquis of Headfort. May* 1838.

We have great pleasure in submitting this interesting paper to the attention of our readers, as we cannot permit ourselves to indulge a doubt with regard to the practical utility of the expedient it propounds. Indeed it appears surprising that this or some similar method has not been long ere this devised, and extensively adopted, for every cultivator must have experienced the injurious results of the usual system of potting and watering, and we feel convinced that many thousands of valuable plants have perished solely for the want of such a preservative as this contrivance affords. A considerable degree of experience with potted plants of all descriptions, has taught us that the operations of potting and watering are among the most important details of their cultivation; but we have seen almost numberless instances in which, though the former was performed with the greatest possible skill according to the usual system, and the latter conducted with great discrimination and punctuality, certain plants have maintained a sickly and unhealthy appearance, and some have even perished, either on account of a deficiency or a redundancy of water.

The improvement in the construction of flower-pots here suggested, will entirely remove the difficulty experienced in watering potted plants; as, if the inside pot be made of a porous material, the application of water to the surface of the soil will be almost entirely superseded. By this method, any superabundance of moisture about the roots (by which hundreds of plants are annually lost) will be prevented, and what is of still greater importance, the plants will be preserved from the exhausting heat of the sun in summer, which so frequently penetrates the pots and destroys the roots, in which indeed exists the vitality of the plants.

In adapting this system to cuttings, we would recommend that the order of proceeding be inverted, and instead of planting the cuttings in the inner pot, they should be placed in the space between the two pots, which should in such case be filled with potsherds to within two inches of the surface, the remaining part being occupied with sand. The value of this method in striking cuttings, consists in the body of soil being small, so that it is more easily penetrated by air, and is thus preserved from becoming saturated with moisture; and its importance may be seen by examining a pot that had been filled with cuttings, since those in the centre of it never succeed so well as those nearer the sides. The fact also that many of the most distinguished nurserymen adopt it with those sorts of plants which are difficult to strike, is a sufficient evidence of its superiority. The central pot, however, should in this instance be left entirely empty, and care must be taken to provide holes in the bottom of the external pot for the escape of water.

If the additional expense of the invention here noticed be objected to, it may be answered, that it is only recommended for those plants which require either a very large or an equally limited supply of water; but there can be little doubt that a system which preserves plants from sudden destruction by drought or saturation with water, although at a trifling increase of original expenditure, will ultimately be found the wisest and most economical.

REMARKS ON THE INFLUENCE OF CLIMATE ON PLANTS.

ARTICLE IV.—THE INFLUENCE OF LIGHT—(*continued*).

Resuming the consideration of this interesting subject from the point at which we deferred it in our last number, our next proposal is to inquire generally into the degree of light necessary to cultivate the numerous species and varieties of *Camellia* in the artificial structures of this country, so as to flower them in the highest possible state of excellence, as well as to maintain the plants in a healthy and luxuriant condition. As we were before called upon when speaking of heaths, so are we again now, strongly to condemn the practice of growing a mixed collection of plants in one house, as the ill effects of which it is productive are perhaps more fully exemplified in Camellias than in almost any other extensive tribe of plants. In nearly every collection of plants in which Camellias are cultivated, except when they are allowed a house to themselves, they are kept in the greenhouse or conservatory, and exposed to all the light which can be admitted by a glazed roof, and what is still worse, are frequently placed in the open air during the summer months, beneath the full blaze of a meridian sun. In such cases it is not surprising that they never attain that luxuriance of foliage which is one of their chief ornaments, and that their flowers are always of an inferior character. It would indeed be matter for wonder if these effects did not become manifest, as it is well known that Camellias delight in a shaded position, and one in which they are naturally, or can be artificially, screened and protected from the more violent rays of the sun. Since then it is a fact sufficiently and incontestably proved and established, that Camellias do not require a great degree of light, and indeed that the degree of light to which the usual inhabitants of our greenhouses are exposed is prejudicial and injurious to these plants, how is it possible that any success can attend the system of management wherein their habits are not consulted, but the treatment pursued towards them is literally pernicious and detrimental? If an individual were to advise any gardener or cultivator to allow his greenhouse or stove plants to remain exposed to the inclemency of the weather during a night of severe frost, he would instantly scout such a proposition with deserved ridicule and scorn. And yet, strange to say, that very gardener or cultivator is continually practising certain systems in the management of various kinds of plants which are as decidedly injurious to those plant as frost would be, although not to the same extent!

It is somewhat extraordinary that a perseverance in indiscriminate treatment should render it necessary so strenuously to decry a system which is admitted by all intelligent cultivators to be injurious and absurd; but this is a task which horticultural writers continually have to encounter, and certainly it argues rather unfavourably for the docility and shrewdness of our practical brethren. The cause of this, however, is twofold; in the first place, plant-cultivators study too much their own convenience, frequently to the prejudice of the plants beneath their care; and, secondly, it appears to be a prevailing (but certainly a most erroneous) notion amongst them, particularly with those who possess greenhouses of limited size, that the greater variety of plants they can collect together, the more pleasing and ornamental will be the effect produced. By cultivators studying too much their own convenience, we mean, that they will seldom take the trouble to adapt their treatment to the habits of each particular plant, and in fact, by cultivating a miscellaneous assemblage of plants of the most incongruous habits in one house, it is absolutely impossible to give to each the particular treatment it requires, however much the cultivator may be disposed to do so. It therefore follows, that, in a collection of greenhouse plants, however limited it may be, it is wiser and better to cultivate only such as assimilate to each other in habit in one house, and thereby to grow them to the highest state of perfection, than reduce to a general system of treatment, a mixed assemblage of the most contrary kinds, to the great injury of the whole collection, and very probably to the total destruction of many plants.

That the species of *Camellia* require a house to themselves, and that such a house should be peculiarly situated, we have previously demonstrated; and we now recommend that the Camellia-house should have a north-western or western aspect, in which case the plants would never be subjected to a greater degree of light than they are able to endure without injury. There are, however, many plants of similar habits for which such a situation would be admirably adapted, and amongst these *Rhododendrons* may particularly be mentioned, which of course might be admitted to a place in the Camellia-house. But where a situation so congenial to their habits cannot be secured, it is important that they should be shaded during the summer months; and on no account whatever should they be removed to the open air, unless to a very shaded situation, as we have fully experienced the ill effects which such treatment is calculated to produce.

The next description of plants on which we propose offering a few remarks relative to the influence of light, is the highly fashionable and popular genus *Pelargonium*. It is almost unnecessary here to state, that the beautiful species and varieties of this genus require a great degree of solar light; as every person must have witnessed the bad consequences resulting from the confinement of these plants in a sitting-room, or other situation, where light can be only partially admitted. It is not uncommon for amateurs and even gardeners to ascribe such effects to the want of air, but it is sufficiently evident that solar light is the most essential agent in the production of strong and healthy shoots, and also of large and handsome flowers, and that where there is any deficiency in the supply of this element, there will be a corresponding defect in the health and beauty of both plants and flowers. As we intend furnishing our readers in an ensuing number with some remarks on the general treatment of this genus, we refrain from enlarging here, and proceed to offer a few observations on the fifth and last division which we proposed to institute of what are generally designated "greenhouse plants."

Under the head of Miscellaneous Greenhouse Plants, we intend classing the genera *Acacia*, *Banksia*, *Protœa*, *Fuchsia*, and in short, all those greenhouse plants which possess no affinity in character or habit to either of the four divisions previously considered. Most of the plants of this class thrive best in a house where an abundance of light is supplied, and may therefore without impropriety be congregated together in a distinct house, and kept as near as possible to the glass. We may here be permitted to explain what we intend when we recommend allowing any plants a great degree of solar light, and also to enumerate the means of effecting that object; and first, we would recommend that the aspect of the house should be as nearly as possible facing the south, or between this point and south-west: secondly, that the materials of which the roof of that house is constructed should be of the slightest procurable description, consistent with strength, so as to offer as little obstruction as possible to the sun's rays; and where expense is not so much regarded, curvilinear roofs will be found far superior to those of the usual construction: thirdly, it is of great importance that the plants should receive the rays of light vertically, and not obliquely; that is, that they should all be placed so as to receive the light from the roof, in preference to the sides or front of the house; it may here also be observed, that the roof of the house should be so inclined according to the sun's average declination, that there be the least possible refraction of light; lastly, that the plants should stand at a sufficient distance from each other, to admit of the access of light on all sides, and also be so arranged according to their sizes, that the smaller plants shall not be shaded by the larger ones. With reference to this latter particular, however, where the plants are placed out in the bed or border of the greenhouse or conservatory, it should be borne in mind at the time of planting them, that there may be a great diversity of age in the plants, and thus those which are at that time the smallest may ultimately become the largest; so that they should not be planted according to their actual height, but according to that which they may reasonably be expected to attain, otherwise it will be found that those of more rapid growth will eventually deprive the others of the beneficial influences of the sun, and thus materially injure them.

To the propriety of separating a collection of greenhouse plants into these five divisions we are aware that some objections will be entertained, since there are few cultivators who possess sufficient means for building five distinct houses for plants of this description; and the taste for variety is so prevalent, that, as we have before remarked, a whole collection of plants is frequently sacrificed, merely because the cultivator is desirous of possessing as many different kinds as he can possibly collect. It were easy to show that a most pleasing variety might be obtained from plants of the same habits, and that all that can be called variety in the most extensive mixed collections, consists only in the difference of habit and structure, while there is one uniform appearance of sickliness and deterioration, and none of that health and beauty which can alone be pleasing to a refined taste. We have repeatedly witnessed the ill effects of the usual system of mingling plants of varied habits, and we recommend all cultivators with limited means to devote their attention to one particular class of plants, not merely as an excellent author has observed, because every thing around us proves that man is incapable of attaining success if his attention be directed to too many objects at once, but also because a peculiar kind of treatment is necessary for different tribes of plants, and unless they are placed in circumstances where that treatment can be properly administered, they will never arrive at the degree of perfection to which they are capable of being brought.

In more extensive collections, the object of these remarks may be fully effected by erecting glass partitions in the greenhouse for the purpose of separating the different tribes of plants, where distinct houses cannot be set apart for this purpose; but we must and will contend, that complete success in the cultivation of any of the tribes before named, cannot be attained unless they are allowed a house or a division of a house (which is virtually the same) to themselves, and therein treated according to their particular nature and habits.

Before we dismiss the subject of this and the preceding articles, it may be well to adduce a few observations on the influence of solar light generally upon vegetation, and in these we shall endeavour to embrace all hardy plants. Solar light is the grand cause of all colour in vegetation, both in foliage and flowers; and hence, an elegant author has most aptly designated the sun the great *limner* of nature. It is the action of solar light upon the leaves of plants which produces their lively green colour, and also elaborates the sap, converts it into pulp, imparts to the plant its vital energies, and sustains them in health and vigour. To solar light all flowers are indebted for their brilliant hues, as those which are produced in the dark are almost entirely destitute of colour. In fact, all colour in vegetable substances, is but the decomposition and partial reflection of solar light, so that no substance has actually any colour in itself, but the hue it presents depends upon its capacity of absorption of light. The sun may be said to be the prime source of colour in vegetation in two ways; first, by qualifying it for, and regulating its capacity of, the reception of the prismatic rays, which is undoubtedly the principal and most essential one; and secondly, by its actual radiation on the substance, eliciting its capacity of absorption, or in other words its colour, by rendering it visible, which artificial light is incapable of doing, as is proved by the popular opinion, that daylight alone displays the true colours, while artificial light, itself decomposed and imperfect, is deceptive. Light is also the principal agent in producing the means whereby plants may be increased, as seeds will never mature themselves properly in the absence of a due degree of this element.

From these remarks, the necessity of a constant supply of light to all plants will be sufficiently obvious, but in the cultivation of plants, either in artificial structures or in the open ground, it must be modified and adapted to their particular circumstances and habits. As a general rule, however, we may observe, that where plants are required to produce seed or fruit, they cannot be too much exposed to solar light throughout the whole period of their growth (some few sorts excepted); and, on the contrary, when flowers alone are desired, they should be shaded as much as practicable after the flowers are expanded, though prior to this, they should be exposed to solar light as much as is consistent with their general habits. Again, most plants that are firmly and fully established in the ground, will endure almost any quantity of light, if they are well supplied with water at the roots; but those which have been newly transplanted, require to be shaded from the fiercest of the sun's rays, otherwise they would be exhausted and killed by excessive evaporation.

Enough, however, has been said to show the great importance of attention to this subject in a practical point of view, and we trust what we have advanced will have the effect of inducing cultivators to investigate this subject more minutely; as we are confident, that by thus consulting the habits of plants, and the reciprocal influences subsisting between them and the atmosphere, their systems of cultivation may be ameliorated, difficulties which now attend them will be removed, and that which is now in many instances a toilsome and unsatisfactory task may be rendered a delightful amusement.

ON SOILS USED BY NURSERYMEN IN POTTING PLANTS.

An erroneous impression appears to us to have obtained generally amongst professional and amateur gardeners, relative to the soil used by nurserymen in potting plants, which we are anxious should be removed, as it has tended much to retard the superior cultivation of some plants, particularly with those persons who are always ready to follow the general practice, without taking the trouble to investigate its claims to adoption. We have frequently heard it asserted, that when plants are purchased from nurseries, they should be repotted into the same soil as that used by the nurseryman; and so rigorously is this practice adhered to by some cultivators, that we much question whether anything but the actual loss of the plant, would deter them from using similar soil to that in which the plant was received from the nursery.

So far as relates to new plants, however, this opinion may generally be correct, for nurserymen are always anxious to obtain large specimens of any rare species; but with regard to the old inhabitants of our greenhouses and stoves (especially the former), this principle is by no means to be depended upon. We have conversed with nurserymen on the subject, have examined the soil in which plants received from them was potted, and compared it with that which our own experience has proved to be most suitable; and the result of our inquiry has uniformly been, that the soil used in nurseries for common plants, is invariably less nutritious than is necessary to grow such plants in perfection. Indeed, a little reflection must convince every person that such is the case. No one can doubt that the object of nurserymen in growing plants of the description here mentioned, is to bring them to a saleable state, and afterwards retain them in that state till they meet with a purchaser, without once thinking of cultivating them in a superior manner; while the aim of the gardener or amateur is as obviously to grow them to the highest possible perfection. Were nurserymen to attempt to effect the latter object on so large a scale as is necessary to maintain their establishments, they would require accommodation of nearly twofold extent, and likewise render the greater part of their plants unsaleable: for common plants purchased at nurseries are seldom required to be large, and indeed, purchasers will rarely go to the expense of procuring large specimens, even when they are desirable.

The real statement of the case then is, that with nine plants out of ten which are procured from nurseries, the cultivator who is anxious to obtain fine specimens should pot them in stronger and richer soil than that used by the nurseryman. This rule, however, is by no means infallible, and we merely wish to expose the impropriety of what we believe to be the professed opinion, and urge cultivators to be guided more by their own experience, or the general appearance and habits of plants. We may likewise qualify this statement by saying, that it is more applicable to plants of three, four, or more years' growth, than to those which are younger and smaller. It should be observed, that to the manner in which plants are usually potted in nurseries there can be no possible objection, as it is deserving of the highest encomium, and it is to the soil alone that these remarks are directed, not as being really objectionable, but as containing an insufficient quantity of nutriment to induce the plants to attain a high degree of luxuriance or perfection.

Intimately connected with this subject, because resulting from the same cause, is another particular which it may be well to mention here, relative to plants purchased from nurserymen. We allude to the size of the pots in which common plants are usually kept in nurseries, and would recommend all persons who may have occasion to procure plants from such establishments, to examine the roots immediately on receiving them, as it will almost invariably be found that they require shifting into larger pots, particularly those of the description to which our previous remarks on soil are applied.

NEW AND RARE PLANTS,

FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR AUGUST.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ).

THE EUPHORBIUM TRIBE (*Euphorbiaceæ*).

Euphorbia rigida. Double-glanded Euphorbia. A hardy perennial species, of prostrate habits, and interesting chiefly on account of its thickly-set, rigid, glaucous foliage, and the contrast between the bright crimson and yellow colour of its floral envelopes, the latter being the internal, and the former the external colour. The Hon. F. Strangways brought this species from Italy, and it has endured the late severe winter in the garden at Abbotsbury, producing its flowers in March of the present year. It thrives well on rockwork if protected from wet, and partially sheltered from cold in the winter, and may be propagated by separating the underground shoots, or planting pieces of the roots with the thickest extremity slightly above the surface of the soil. *Bot. Reg.* 43.

Euphorbia jacquiniflora. Jacquinia-flowered Euphorbia. It is curious to observe the striking difference in the appearance and habits of this species to that above noticed. This is a most beautiful stove species with brilliant scarlet flowers, greatly resembling the *E. fulgens*, figured vol. iv. p. 31 of this Magazine, and only distinguishable from it (as far as we can discern) by the less brilliant colour of its flowers, its leaves being of a lighter green, and particularly by the latter being destitute of the fine purple colour on the under surface which is so conspicuous in *E. fulgens.* Nothing is known with respect to its native country, it having been received at Glasgow from the Berlin Botanic Garden, where it flowered during the winter months. *Bot. Mag.* 3673.

THE HEATH TRIBE (*Ericaceæ*).

Rhododendron albiflorum. White-flowered Rhododendron. A remarkably distinct and well-characterised species, growing from two to three feet high, producing leaves only at the extremities of the branches, and these being deciduous. The flowers are smaller than those of most other species, cream-coloured, and pendent. It was found by Mr. Drummond in the woody districts of the Rocky Mountains, and seeds were communicated to Dr. Graham of Edinburgh, plants from which flowered in July 1837. *Bot. Mag.* 3670.

THE LOBELIA TRIBE (*Lobeliaceæ*).

Lobelia Bridgesii. Mr. Bridges' Lobelia. This is a very elegant and highly ornamental plant, first discovered by Mr. Bridges near El Castello de Amorgos, Valdivia, in the south of Chili. It grows to the height of three or four feet, with leaves occasionally more than six inches long, and the large blossoms are of a beautifully delicate rose-colour. It was raised from seeds in the Royal Gardens at Kew, and has been treated as a greenhouse species, in which situation it flowers in the month of July. *Bot. Mag.* 3671.

THE NIGHTSHADE TRIBE (*Solanaceæ*).

SOLANUM CAMPANULATUM. Bell-flower Solanum. The distinguishing characteristic of this large and beautiful species, besides its flowers being campanulate, from which its name has arisen, is its being so liberally furnished with aculei; since the stems, leaves, calyx, and every part of the plant except the flowers, are completely armed with these formidable prickles. The well-known Mr. Brown first found it near Port Jackson, and noticed it in his excellent Prodromus. It grows and flowers freely in the greenhouse, requiring a rich soil and an abundance of pot room. *Bot. Mag.* 3672.

THE ORCHIS TRIBE (*Orchidaceæ*).

MAXILLARIA ROLLISONII. Messrs. Rollison's Maxillaria. A very beautiful and interesting little plant, which we have before noticed as being very similar to *M. stapelioides* in its size and foliage, but widely different from it in its flowers, which are of a lightish yellow colour, the labellum being very prettily spotted with pink and red. It was imported by Messrs. Rollison, Tooting, from Brazil, and first flowered with them in August last. *Bot. Reg.* 40.

CYRTOCHILUM MACULATUM. Spotted Cyrtochilum. This plant is stated to have produced its flowers for the first time in this country in the garden of the Horticultural Society, having been sent thither by Mr. Hartwig from Vera Cruz. It has since flowered at Messrs. Rollison's, with G. Barker, Esq., of Birmingham, and we have succeeded in flowering it at Chatsworth. It is a very neat and pretty species, and Dr. Lindley observes that it has been mistaken for the *Oncidium tigrinum* of La Llave and Lexarza, which he states is "a very different plant, with a reniform lip placed upon a long stalk." *Bot. Reg.* 44.

CORYCIUM OROBANCHOIDES. Broom-rape Corycium. An inconspicuous but very curious little plant, which flowered in the collection of J. Rodgers, Esq. Jun., at Streatham, and which Dr. Lindley believes to be the first *Corycium* that has ever flowered in Europe. It is a native of the Cape of Good Hope, where it grows in a sandy soil, and flowers in September and October. *Bot. Reg.* 45.

ZYGOPETALUM MURRAYANUM. Mr. Murray's Zygopetalum. This is one of the interesting productions of the Organ Mountains of Brazil, which have been recently explored by Mr. Gardiner, and this plant, with many others, sent to this country. It is certainly far inferior to most of the other splendid species, but nevertheless a very neat and pretty plant, producing flowers of a greenish-yellow colour, with a white labellum, which is striped with purple, and the column is streaked with red. It flowered in the Glasgow Botanic Garden, and is named by Mr. Gardiner in compliment to Mr. Murray, the skilful curator of that establishment. *Bot. Mag.* 3674.

Cattleya Mossiæ. Mrs. Moss's Superb Cattleya. Unquestionably one of the most magnificent of all vegetable productions, surpassing even *C. labiata* in the size of its flowers, and the exquisite richness of the markings of its labellum; added to which, its fragrance is said to be most powerful and agreeable. We give the following dimensions as stated by Sir W. J. Hooker:—"The diameter of this splendid flower is, from the tip of the upper sepal to the tip of the labellum, seven inches and a half; from tip to tip of the two opposite petals eight inches and a half! each petal being a little more than four inches long, and two inches and a half in breadth; twenty-four inches in the circumference of the entire blossom!" It is named after Mrs. Moss, of Otterspool, near Liverpool, in whose collection it first produced its gigantic flowers, and to which it was introduced from La Guayra, through the medium of George Green, Esq., of Liverpool, in September 1836. It differs from *C. labiata*, to which its flowers bear a great resemblance, "by its elongated, branching stem, bearing many deeply sulcated pseudo-bulbs, by the much broader sepals and petals, which latter are unguiculated at the base, and by the colour, and markings and size of the lamina of the labellum." *Bot. Mag.* 3669.

NOTICES OF NEW AND RARE PLANTS

IN FLOWER IN THE PRINCIPAL NURSERIES IN THE VICINITY OF LONDON.

Messrs. Henderson's, Pine Apple Place. *Eutoca Wrangeliana.* This pretty annual is now flowering most abundantly in the open ground at the nursery of the gentlemen above named, and is well calculated for planting in beds or masses in the flower-garden, as it makes a most brilliant display when thus treated. *Potentilla Tongui.* This is a neat and very interesting little plant, of trailing habits, and producing a great number of its showy orange and brown-coloured blossoms; it is a valuable species for planting on rock-work, mounds, or any elevated and conspicuous situation. *Sedum Sieboldii.* A Japan species of some interest, and apparently perfectly hardy; its dense clusters of small pink blossoms, with which the plant is most profusely furnished, are now exhibiting themselves at this nursery, and remain expanded a considerable time.

Mr. Knight's, Chelsea. *Gesneria rupestris.* This elegant little plant, of which a figure has been given at page 53 of the present volume of this Magazine, is flowering in great perfection in the stove of this gentleman, and is one of the most delightful objects which have yet been cultivated in our stoves. *Aristolochia hyperborea.* We noticed this species in our July number, and there stated that it was destitute of a specific name. We now give the one under which Mr. Knight received it, and add, that it is again flowering much more abundantly in the collection of that gentleman. It is a very handsome species, and possesses but little of the offensive odour for which its allies are remarkable. *Ferraria azurea.* An extremely beautiful, and we believe new, species of this interesting genus of bulbs, with bright azure-coloured flowers; it is flowering at the present time in the greenhouse of the above nursery, but the flowers are extremely fugitive.

Messrs. Loddiges, Hackney. *Cyrtochilum Bigtonense.* A new and highly beautiful orchidaceous plant, of a rather extraordinary size for a species of the above genus. The plant which is now flowering in the splendid collection of these gentlemen, has a flower-spike full three feet in length, but it is said to attain the astonishing height of six feet. The flower-stem grows quite erect, and the flowers are produced at the distance of about an inch from each other, nearly its whole length. The blossoms are of a rich lilac and brown colour, and exceedingly ornamental. These gentlemen have also recently flowered a new species of *Cycnoches*, which is somewhat similar to *C. ventricosum*, but the flowers are much larger, and their colour is a dingy yellow, approaching to orange. *Angræcum gladiifolium.* A small but interesting new species of this genus, with delicate white blossoms, and ovate-lanceolate leaves, is flowering very freely at this nursery, and is worthy of the notice of all admirers of this tribe. Some magnificent specimens of *Lilium speciosum* and *L. lancifolium roseum*, are now most splendidly in flower, and their exquisite delicacy and beauty cannot be too highly appreciated.

Mr. Low's, Clapton. *Lilium lancifolium album.* A fine variety, for which our collections are indebted to Dr. Siebold; its flowers are large and pure white, with reflexed petals, and the habit of the plant is very bold and handsome. It is now flowering profusely at this nursery, and *L. lancifolium roseum* has likewise recently flowered with this gentleman. Both varieties are indispensable to a collection of greenhouse bulbs. *Verbena Tweedieana splendens* and *grandiflora.* Two distinct varieties of this very beautiful species, the former of which has flowers of a richer colour than those of even *V. chamædrifolia*, with the superior character of the species to which it is allied; the latter variety is not of so brilliant a colour, but its flowers are larger, and either or both of them are admirably adapted for flower-garden purposes. In the nursery above-mentioned they are now flowering, as well as in those of Messrs. Rollison and Young.

Messrs. Rollison's, Tooting. In the orchidaceous house of these gentlemen, there has recently flowered a species of *Stanhopea*, which surpasses in size and splendour all other species which we have previously seen, and (*Cattleyas* excepted), we may safely add, all other orchidaceous plants. This most magnificent plant possesses the following distinctive characters:—the leaf-stalks are furrowed only to within about two inches of the pseudo-bulbs, which latter portion of them is perfectly smooth; the flowers are produced *in pairs*, after the manner of *S. grandiflora;* their extreme width from the tip of one sepal to that of the opposite one, is eight inches; the sepals are of a stone-coloured ground, but the lower part of them is completely obscured with a rich sanguineous purple, there being otherwise but few spots and blotches on them; the petals are marked with broad horizontal stripes, of a still darker hue than that of the sepals, and the lip bears some resemblance to that of *S. insignis.* The specimen we are now noticing produced eight flowers, which were all developed at the same time, and besides the surpassing splendour of their colours, their odour was extremely grateful. *Amphicome arguta.* A very elegant plant, said to be nearly hardy, with delicate rose-coloured, trumpet-shaped flowers. It is now beautifully in flower in the greenhouse of this nursery. *Lilium speciosum.* A remarkably fine specimen of this splendid plant, in the possession of the above gentlemen, has eleven flowers now expanded, and it is needless to observe that it is a most superb object. *Rudbeckia Drummondii.* This is a very showy species, introduced by Mr. Drummond, and has large yellow flowers, with a rich dark brown blotch at the base of each petal. It is flowering in a frame in this nursery, but it is most probably hardy.

Mr. Young's, Epsom. *Lilium aurantiacum.* A handsome new species of lily, from Japan, discovered and introduced by Dr. Siebold; the flowers are large and expansive, the petals very slightly recurved, and of a beautiful dark orange-colour. It is now exhibiting its showy blossoms in the greenhouse of this gentleman. *Lisianthus Russelianus.* This beautiful herbaceous plant is flowering at the above nursery, and its large blue blossoms form a striking contrast to its slender and graceful habits. It is a most valuable plant, and should be in every collection. *Chelone barbata alba.* A pretty variety of this interesting species, with white or cream-coloured flowers. When planted in company with the original species, it has a very ornamental effect, and merits a place in every flower border. *Shenogyne speciosa.* This is a new annual species, with bright orange-coloured flowers, in the centre of which there is a circle of a shining, almost black hue, which adds much to its beauty. It is a remarkably free-flowering plant, and makes an excellent display in the flower-garden.

NOTICES ON THE CULTURE OF NEW AND RARE PLANTS

IN THE PRINCIPAL NURSERIES IN THE VICINITY OF LONDON.

On the Propagation and Culture of Statice Arborea.

Notwithstanding the high encomiums with which this truly beautiful plant has been favoured, and the deserved esteem in which it is held by cultivators, it is unfortunately placed beyond the reach of all but the wealthier classes of horticulturists, by the high price at which it was first issued, and which, though now much diminished, is still likely to prove for some time an effectual barrier to its extensive distribution. On a cursory examination into this subject, the question immediately occurs, to what is this extravagant cost to be attributed? The answer to which, and the manner in which it may be reduced, will form the basis of the present remarks.

We imagine that the cause of the high price at which this beautiful plant is necessarily sold, may be traced to the difficulty experienced in propagating it, as it produces naturally so few lateral shoots. This circumstance has called forth the ingenuity of the London nurserymen, who have devised a method for inducing it to throw out lateral shoots, which is highly creditable and ingenious, and will no doubt ultimately be the means of bringing it within the reach of all classes of plant cultivators. The method in question we shall now briefly detail, for the purpose of facilitating its dispersion.

It is well known, that in the axil of the leaf of most shrubby plants, there exists the germ of a new system of life, which only requires to be excited and developed to furnish the means of producing a distinct plant. In many evergreens, however, these germs or buds are so latent, or develop themselves so tardily, that without the application of some artificial stimulus, they can seldom or never be employed for the purpose of propagation. This stimulus must likewise be accompanied with some counteracting principle, in order to produce the desired effects; and for this means, either incision or decapitation is practised. *Statice arborea* is a plant to which this description may be properly applied; and as the process of decapitation is attended with some risk, and deprives the plant thus headed down of its principal shoot, it has been found better to resort to the practice of incision.

The plant intended for propagation is placed in a rather larger pot than is really necessary for it, to allow of the further extension of the roots without its being shifted; then, with a sharp knife, an incision is made in the stem at the axil of all the lowermost leaves, taking especial care to cut within the bud, *i. e.* further into the stem, than the point from whence the bud is expected to proceed. This incision should neither be made horizontally nor longitudinally, but in a sloping direction, inclining more to the latter than the former, and as deep as may be deemed necessary to check the ascent of the sap, and induce it to flow towards, and concentrate in the bud, but by no means so much as to injure the plant. Immediately after the performance of this operation, a stake of about a foot higher than the plant should be inserted in the soil, as near as possible to the stem; and in this stake several notches should be made above the plant, for the purpose of securing to it a small strip of matting, which is likewise to be fastened to the stalk of each leaf, to support and preserve them from breaking off or being otherwise injured; observing previously to place in each incision a small chip of wood, so as to keep it very slightly open.

This part of the operation completed, some pieces of turf or heath-soil partially decomposed, should be placed round the stem of the plant, so as to reach, but not to cover the young buds; and, if this be kept moderately moist, and the pot containing the plant be plunged to the rim in bark with a brisk bottom-heat, a shoot will speedily appear from the axil of each leaf, and in many instances will form roots in this situation, particularly if a trifling incision be made in the outer bark, just below the base of the leaf-stalk, as soon as the buds commence growing. If they fail to produce roots in this manner, the young shoots must be carefully taken off and treated as cuttings; though in this case they will require great attention with regard to shading, watering, and drainage, as they do not strike root very freely, and are therefore liable to perish from any excess of moisture or evaporation. This practice of increasing this plant by cuttings is preferable, when by combination of favourable circumstances they can be induced to strike freely; as, the base of the shoot thus being left, will in the course of time produce fresh shoots, while by the system before detailed, the whole shoots, and consequently all the buds, are removed.

By either method, the plant operated upon is not deprived of its leading or central shoot, and is by no means so much disfigured as if it had been decapitated, besides producing shoots much more speedily, and with much greater certainty. We strongly recommend the practice to all who may wish to propagate this plant, and indeed any other of a similar character, and hope that by the continued application of it, the collection of every lover of plants will speedily be enriched by the accession to it of this most delightful and desirable ornament.

There are two points in the cultivation of this plant which require particular attention; and these are, first, that it should always be planted in a sufficiently large pot; and secondly, that the soil in which it is grown should be somewhat more nutritive than that which is usually employed. Any injury that might be sustained by inattention to the first of these particulars, would be entirely prevented by placing the plant out in the prepared border of a greenhouse, where such a one exists; and by this practice we feel assured that the striking beauty of this plant might be greatly enhanced. As we entertain considerable doubt relative to the plant we are now noticing ever being found capable of enduring the open air in this country, even though it should be duly protected, we cannot recommend planting it in the open border; otherwise, such a situation would be found highly advantageous to it. Treated as a Conservatory plant, however, that is, turned out into the border of the Conservatory as above mentioned, it has few equals, and its superior cultivation should be the aim of every lover of floriculture.

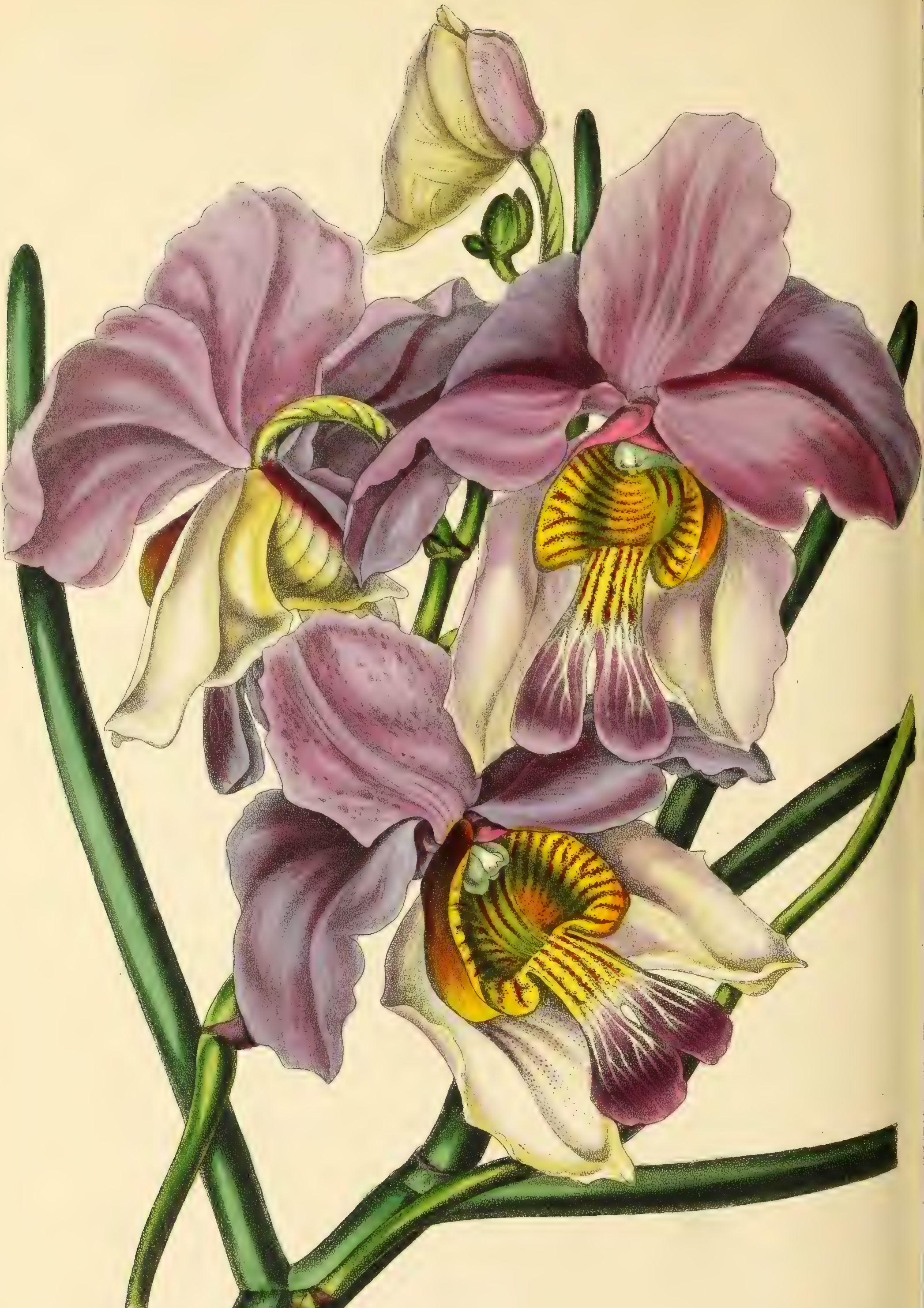
OPERATIONS FOR SEPTEMBER.

Little active exertion being required of the gardener this month (we mean in the departments of floriculture), except such as is necessary for the continued performance of the most ordinary operations, advantage should be taken of this period to devise and mature plans for the improvement of the pleasure-grounds, the erection of houses, or other alterations that may suggest themselves, as it is very impolitic to defer the consideration of these subjects till the time (winter) arrives for carrying them into execution, it being difficult to apprehend the general effect of such alterations at that desolate season; and there are few gardens in which, by the exercise of a judicious taste, some improvements may not be effected.

In the orchidaceous house and stove all the pots should be carefully examined, and those in which water is observed to stagnate, owing to inefficient drainage, should receive immediate attention. In most cases it will be better to turn out the plant entirely, very carefully remove some of the external soil from the ball of earth about the roots, and repot it in fresh soil; for if this shift is not now effected, it is more than probable that the plant will perish during the winter. No plants should be potted at this season under any other circumstances than those just mentioned, except such a change is peculiarly requisite, as it is desirable that no stimulus be applied to induce them to continue growing. As the temperature of the external atmosphere declines, that of the plant-stoves should be decreased to a commensurate extent, and not, as is absurdly done, augmented in consequence; for it is incompatible with the health of plants to keep their functions in unabated action. Besides being manifestly inimical and irrational, such a practice could not be successfully pursued in this country, for this single reason; that however easy it may be to supply the plants with artificial heat, it is impossible to produce a substitute for light; and solar light is as essential to a healthy growth, as heat is to induce any elongation or development of the parts of the plant. With a diminution of heat, a less supply of water will be necessary, and the latter must always be proportioned to the former, with due regard to particular circumstances.

Those greenhouse plants which have been placed in the open air, must be well protected or housed towards the end of the month, and where practicable, they should be elevated to within a foot or eighteen inches of the glass. Air cannot be too freely admitted into the greenhouse in fine weather; and, as in the stove, it should be specially ascertained that every plant has an efficient drainage before the winter commences, watering them only when the surface of the soil becomes dry. Those plants which are intended for forcing during the winter, should be daily exposed to as much light as possible in the open air, as this will prepare them for, and greatly promote, a premature development of their flowers. All young stock should be placed on shelves, at a slight distance from the glass, which, where such convenience exists in the house, is preferable to frames. Annuals may still be sown in pots, particularly stocks and mignonette, to flower early in the spring.

The principal seed-harvest in the flower-garden will occur this month, directions for collecting which have already been given in our last number. Continue to propagate with all possible expedition all plants which have been planted out in the flower-garden, and will not endure the open air through the winter. Measures should be taken to entrap earwigs on Dahlias, by suspending any slight hollow tubes from different parts of the plant, and occasionally examining them, and shaking out the insects into hot water. The seed of biennial and perennial plants should be sown as soon as it is ripe in an open exposed situation. A few of the hardier kinds of annuals may likewise now be sown in the open ground, where they can be sheltered as much as possible from cutting winds during the winter.



OCTR 1. 1838

Vánda tēres.

VANDA TERES.

(TAPER-LEAVED VANDA.)

CLASS.
GYNANDRIA.

ORDER.
MONANDRIA.

NATURAL ORDER.
ORCHIDACEÆ.

GENERIC CHARACTER.—*Labellum* spurred, divided at the base (either short or long), always joined to the column, trifid; middle lobe fleshy. *Petals* spreading, distinct. *Pollen-masses* two, obliquely two-lobed.

SPECIFIC CHARACTER.—*Leaves* cylindrical. *Racemes* ascending, usually two-flowered, equal with the leaves. *Sepals* oblong, obtuse, the highest one erect, lateral ones slightly twisted under the labellum. *Labellum* conical at the base; side segments ascending, nearly truncate; middle one pubescent at the summit, extended, truncate, emarginate.

IT may safely be asserted that Orchidaceous Epiphytes are the most exquisitely beautiful of all nature's productions. Rich in every shade or variety of colour,—airy and fantastic, but always elegant in habit,—replete, beyond description, with every charm that can allure the senses, or enchant the mind;—they totally eclipse all the old inhabitants of our stoves, and moreover present in their number and variety a field of research to the botanical student and the enquiring cultivator, which, from the comparatively little knowledge of them we yet possess, appears really illimitable.

This unqualified assertion of the superior beauty of the tribe, will be divested of all semblance of bombast or exaggeration when viewed in connexion with the magnificent plant represented in the annexed drawing; a plant which defies alike the arts of painting or description to convey an accurate and adequate idea of its distinguished merits. It is indeed an object that is scarcely surpassed in beauty (although it is exceeded in size) by any of the splendid family to which it belongs; but, being unfortunately of rather slow growth, and likewise difficult to propagate, it is at present confined to the collections of the more enthusiastic cultivators.

To a person unacquainted with the habits of Orchidaceous plants, the one here figured must appear a perfect phenomenon, and such an individual would be ready to imagine that the drawing was taken from the plant while in a leafless state; nor will their astonishment be at all abated, but rather augmented, when we inform them that the cylindrical stalk-like branches which are protruded from the stem are considered by botanists to be perfect leaves, no doubt performing the usual functions of those organs, though not deciduous, and ultimately becoming true stems. This instance, as well as the habits of many other Orchidaceous plants, may afford some confirmation of the astounding theory which asserts every part of a plant to be a stunted branch; as it is certain that there are many cases of the leaves of plants actually becoming elaborated into perfect branches.

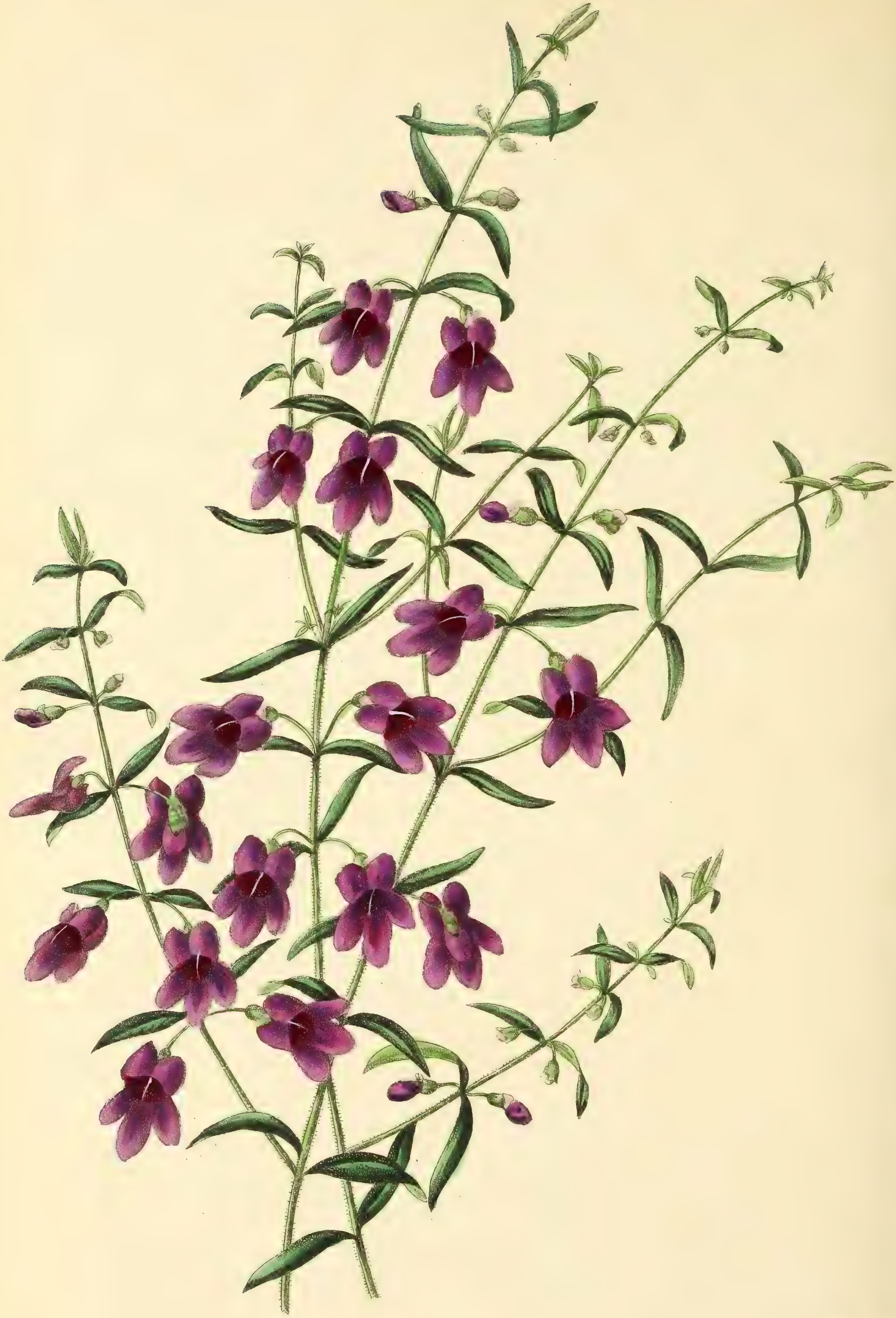
In its habits this plant is, in the strictest sense of the term, an Epiphyte; consequently, it requires no soil about its roots, but merely to be secured to a block of wood, and its lowermost roots protected with moss, which is employed solely for the purpose of excluding light, and retaining a sufficient quantity of moisture, being wholly unnecessary when these important objects can be otherwise attained. It should be kept in a warm and humid part of the Orchidaceous house, and an excellent situation is to suspend it over the cistern (with which, we may here observe, the Orchidaceous house should always be furnished), where the application of moss to its roots will be needless, provided the house is sufficiently shaded, by the constant exhalations from the water kept in the cistern. It is scarcely prudent to keep this plant in a constant state of excitement till it has been induced to flower, and after this period nothing can justify the practice.

Propagation may be effected by carefully detaching the lateral shoots after they have grown to the length of six or eight inches, and attaching them to another block of wood in a similar manner to the old ones; but extreme caution will be requisite to preserve them from excision by moisture till they have recovered from the effects of being dissevered from the parent plant, and commenced growing.

Its native country is Sylhet, in India, where it was first discovered upon trees by Dr. Wallich, superintendant of the Calcutta Botanic Garden; it has since been found by Mr. William Griffith, near Medown, in the Burmese empire; and we have plants of it at Chatsworth, which were brought home by His Grace the Duke of Devonshire's collector, in 1837, having been found by him near Pondooah, at the base of the Khoseea hills.

For the drawing of this splendid plant we are obliged to J. Bateman, Esq., of Knypersly Hall, Cheshire, in whose excellent collection it flowered in the early part of the present season, and our artist was at the same time engaged in figuring a specimen at Messrs. Loddiges', Hackney, who alone, as far as we are aware, possess saleable plants.

The generic name is the Hindoo term of the original species.



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Chilodia scutellarioides.

CHILODIA SCUTELLARIOIDES.

(SCUTELLARIA-LIKE CHILODIA.)

CLASS.
DYDYNAMIA.

ORDER.
GYMNOSPERMIA.

NATURAL ORDER.
LABIATÆ.

Generic Character.—*Calyx* campanulate, tube short, with about thirteen streaks, two-lipped; upper lip entire, lower one emarginate; throat naked internally. *Corolla* with a large but short tube; limb campanulate, barely two-lipped; upper lip erect, nearly smooth, emarginate, bifid; lower one trifid, middle lobe largest, bifid or emarginate, all of them smooth and spreading. *Stamens* four, nearly equal, shorter than the tube of the corolla. *Filaments* glabrous, naked. *Anthers* two-celled; cells parallel, smooth, naked, not bearded. *Styles* bifid at the summit, divisions nearly equal, crowned with stigmas.

Specific Character.—A *shrub* with glabrous or pubescent branches. *Leaves* sessile, scarcely half an inch long, linear or lanceolate, acute, quite entire, with subrevolute edges, green on both surfaces, glabrous, or finely downy beneath in the young state; floral leaves exceeding the flowers. *Pedicels* axillary, bibracteate. *Calyxes* ciliated. *Corolla* glabrous, exceeding the calyx a little. *Don's Gard. and Botany.*

A very neat and pretty greenhouse shrub, introduced to this country in 1828, seeds of it having been received at the Royal Gardens at Kew. It is a native of New South Wales, and is said to be rarely met with in that colony, being found principally in barren forests in the vicinity of the Nepean river.

The plant of which a drawing is prefixed, is, we believe, the only known species of the genus, which was founded by Mr. Brown, and is closely allied to the genera *Prostranthera* and *Scutellaria*, but differs from them in having the lower lip of its calyx emarginate, or more frequently bifid, in the base of the calyx being furnished with bracteæ, and in the anthers being destitute of the spur-like appendages which are seen in the genus *Prostranthera;* though in other respects it greatly resembles that genus, particularly the species *violacea.*

It requires to be potted in a mixture of light sandy loam and heath soil, with the addition of a little white sand, if this is not naturally comprised in either or both of the above soils; and care should be taken to allow it an effective drainage, both by placing an abundance of potsherds in the bottom of the pot, and also by mingling small pieces of them, or of broken sand-stone, with the soil. It is very susceptible of injury from any superfluity of moisture about the roots, therefore water should be applied sparingly and with due discrimination.

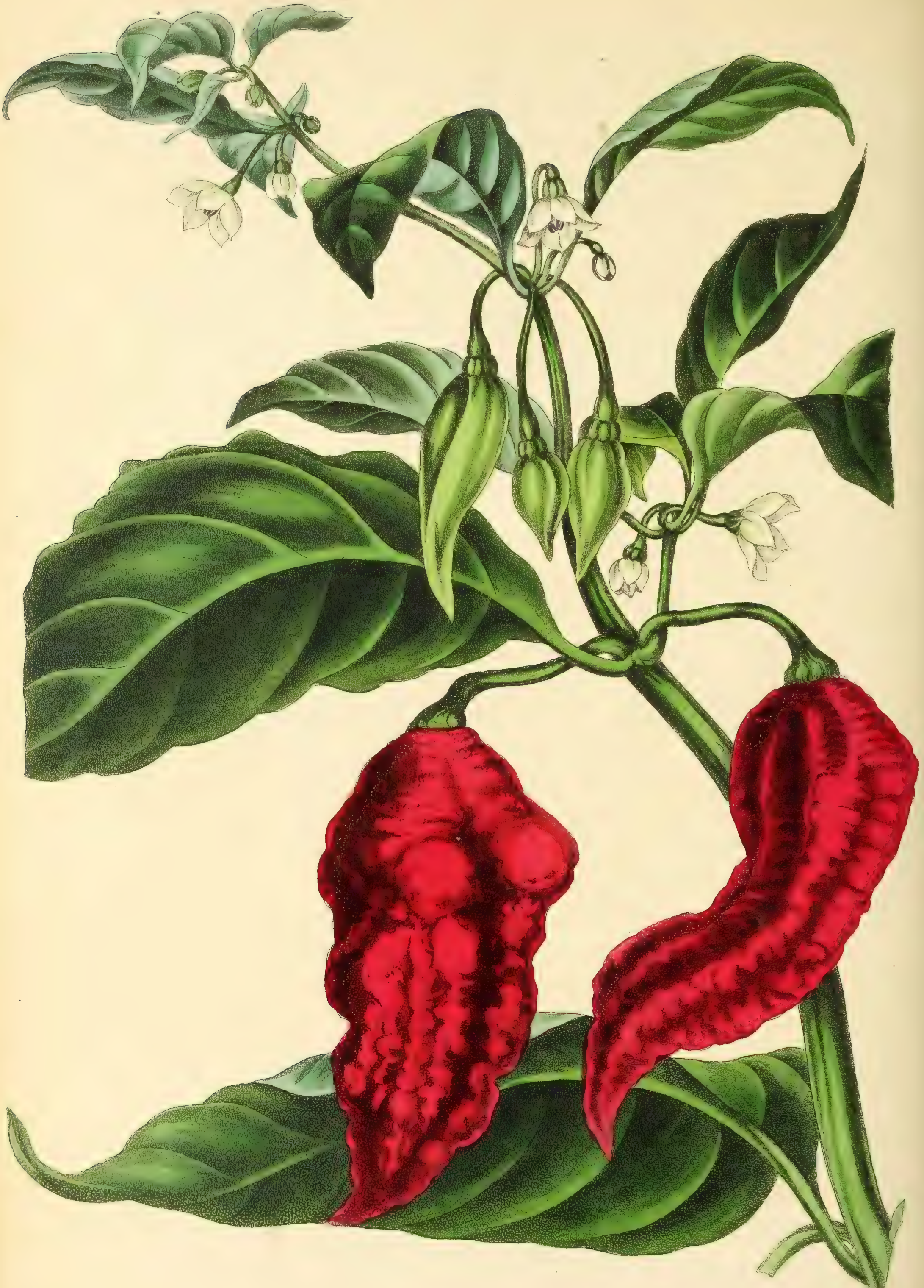
If it were kept in a heath-house, and treated as the Heaths, (soil alone excepted,) there can be little doubt that it would thrive in great perfection, and its pretty purple blossoms will exhibit themselves during the greater part of the summer months in very pleasing profusion.

In its propagation, cultivators have experienced some difficulty, but cuttings of it will strike (though slowly) if planted in sand, and one principal reason why they do not produce roots more speedily is their tendency to flower after being planted as cuttings. If the flower-buds be timely removed, and the cuttings judiciously treated in other respects, they will most probably succeed better than they have hitherto done, and the plant become a common ornament to our collections.

Seeds are occasionally ripened, but the produce from them has been very inconsiderable, and this is by no means so certain and expeditious a mode of propagation as that by cuttings.

The collection of Messrs. Rollison, of Tooting, furnished the subject of the present drawing, from whom, and from Mr. Young, Epsom, plants of it may be procured for a trifling sum.

The generic name is taken from *cheilos*, a lip, and *odous*, a tooth, in allusion to the indentation in the lower lip of the calyx.



OCTR 1 1838

Capsicum.

CAPSICUM USTULATUM.*

(BURNING CAPSICUM, OR TRUE CHILI.)

CLASS.	ORDER.
PENTANDRIA.	MONOGYNIA.

NATURAL ORDER.
SOLANACEÆ.

Generic Character.—*Calyx* permanent, five-toothed. *Corolla* rotate, limb plicate, five-cleft. *Anthers* connivent, two-celled, dehiscing lengthwise. *Stigma* obtuse. *Berry* dry, inflated, and hollow, of a papery consistence, two to four-celled, many-seeded, naked. *Placentæ* adnate to the dissepiment. —*Don's Gard. and Botany.*

Specific Character.—*Plant* frutescent, much branched. *Branches* flexuose, divaricate, angular. *Leaves* very large, ovate, acuminate, glabrous, as well as the petioles. *Calyx* entire. *Peduncles* usually solitary. *Fruit* angular, pendulous, from one and a half to two and a half inches long, covered with irregular protuberances, bright red.

Seeds of this very distinct and handsome species of *Capsicum* were originally received by us from J. Bateman, Esq., of Knypersly, and as it is new, valuable, and by no means unornamental, we have pleasure in introducing it to more general notice by the accompanying plate. The brilliant colour of the pods will render it an acceptable feature in the greenhouse during the winter months, as, by a little attention to the time of sowing, they may be induced to ripen at the above season, and will continue in this interesting state a considerable time.

It may appear inconsistent with the character of a botanical work to allude to the cultivation of an esculent vegetable, but the very ornamental appearance of this species, combined with its excellent qualities as a condiment, will excuse our notice of it; and we have no doubt that the few following hints will be generally well received by our readers.

The seeds should be preserved in the pods till they are required for sowing, and about the month of March they should be taken out and sown in shallow pans, covered with about a quarter of an inch of soil, and placed in a cucumber or other hot-bed frame, plunging the pots in the soil or bark which is usually spread over the bed for the suppression of steam. As soon as the plants have perfected their seed-leaves, they should be planted singly into small pots, and these pots again immersed in the hot-bed, keeping them as near as convenient to the glass throughout the whole period of their growth, and shifting them frequently and by slow degrees till they arrive at a fruiting state.

The soil used for potting should be a light loam, greatly enriched with decayed manure; and though they will grow tolerably well if placed on the flue of a vinery or other forcing-house, they thrive much better when supplied with a gentle bottom-heat by being plunged in bark or other fermenting material. In either case, a liberal supply of water is necessary, though much less so in the latter.

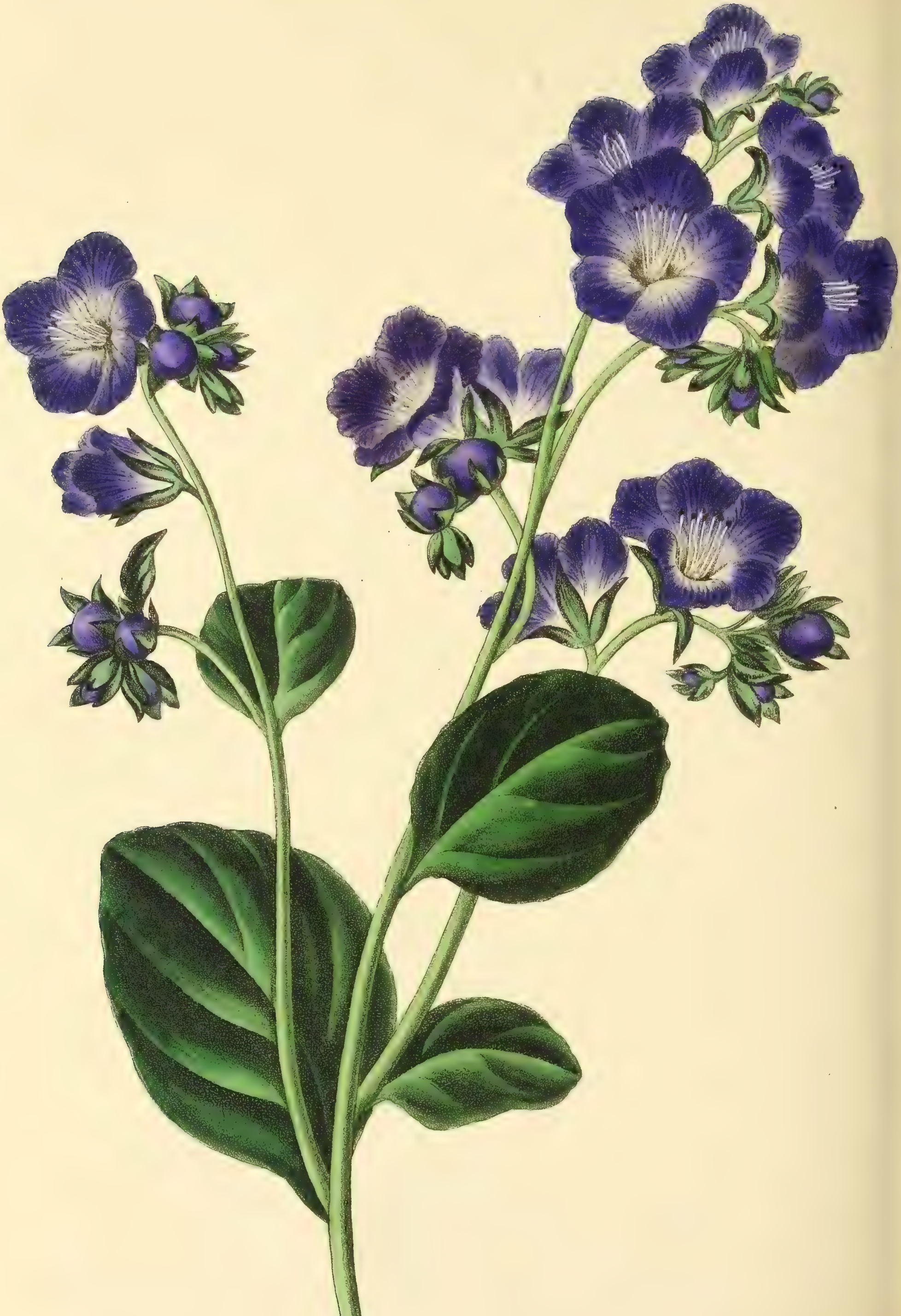
The house, pit, or frame in which they are kept, should always be maintained at a temperature not lower than 65 degrees Fahrenheit, and as little above this as circumstances will permit; but a humid atmosphere is indispensable, and they will be much improved by frequent syringing, particularly when the temperature is usually higher than the above ratio, as they are very liable to the attacks of the red spider. These observations, however, apply only to the plants which have not matured their fruit, for after this period of their existence, they will continue healthy a much longer time in a lower temperature.

Used as an ingredient in pickles, this is decidedly the most valuable species with which we are acquainted, the pods having an unusual spicy and pungent flavour, but very agreeable when employed sparingly.

Our drawing was taken at Chatsworth in the autumn of last year, and we have cultivated it extensively both for culinary and ornamental purposes during the present season.

The generic name is derived from *kapto*, to bite, in allusion to the pungent qualities of the fruit of the species.

The specific appellation refers also to the remarkably hot and burning qualities of the fruit, and when thus superadded to the generic, implies that this species possesses these properties in an extraordinary degree. We received it under the name of "True Chili Capsicum."



OCT^{R} 1. 1838.

Eutōca Wrangeliana.

EUTOCA WRANGELIANA.

(BARON WRANGEL'S EUTOCA.)

CLASS.
PENTANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
HYDROPHYLLEÆ.

GENERIC CHARACTER.—*Corolla* deciduous. *Ovarium* roundly-oval, hairy. *Placentæ* linear, adhering to the back of the partition of the ovary, from four to many-seeded. *Capsule* with incomplete divisions, usually two-celled.

SPECIFIC CHARACTER.—*Plant* an annual, growing from four to six inches high. *Stems* numerous, partially declinate, somewhat tortuous, hairy. *Leaves* ovate, acute, entire. *Corolla*, twice as long as the calyx; and about equal in length to the stamens. Placentas eight to ten, ovulate.

CONSIDERED as the principal ornaments of the flower-garden throughout the most delightful period of the year, and, during a considerable portion of it, the most interesting features in the greenhouse, annual plants have great claims to our attention, and should be very extensively cultivated in every pleasure-garden. But the vast number and variety of sorts that are now known in our collections, the whole of which it is almost impossible to introduce into even the most extensive gardens, renders necessary a judicious selection of the best kinds, in order to compensate for any deficiency in number or variety by the superior beauty of those which are admitted.

In such a selection, the showy species here figured is well worthy of a distinguished place, as it is a most elegant and ornamental plant, and one of which no flower-garden, greenhouse, verandah, or other suitable plant structure should be destitute.

Although an excellent species for planting in beds in the flower-garden, it is peculiarly adapted for growing in pots, to supply the deficiency of other flowers in the greenhouse during certain periods of the year, as its dwarf and compact habits render it unnecessary to support the branches with more than a few very short stakes, and if the stems are tastefully disposed at an early stage of their growth, these stakes will be entirely concealed, and an almost unbroken surface of beautiful blue blossoms will be exhibited. It is scarcely necessary to recommend the practice of growing delicate and showy annuals in the greenhouse during the dull season of the year, as every cultivator must be aware of its advantages.

Seeds sown very late in the autumn of one season, the plants being potted into small pots, three in each pot, and kept through the winter in a frame or greenhouse where they can be placed close to the glass, re-potting them into larger pots if requisite, will produce flowers early in the spring of the following year, and prove valuable and interesting ornaments to the greenhouse. Again, if these plants are allowed to perfect their seed, and some of this is sown in August or September, or even later, and treated in a similar manner to that above narrated, they will flower during the whole of the last months of the year, and probably much longer if properly managed.

Any light and open loamy soil will be found suitable for this plant, though those which are grown during the summer will require one stronger and more retentive. Water should be applied to them very cautiously in the winter, and the atmosphere of the house or frame kept as free from damp or vapour as possible; but if they are retained in pots through the summer, a larger supply of it will be necessary.

This species was first discovered in the Russian colony of Ross in New California, which is situated on the north-west coast of North America; and seeds of it were communicated to the Imperial Botanic Garden at Petersburgh, from whence it was received in this country, we believe, by the Horticultural Society. It was named by Fischer and Meyer after Baron Wrangel, a Swedish nobleman of distinction, who has been employed in the Russian service in exploring the districts round Behring's Straits.

We are indebted to Messrs. Henderson, of the Edgeware Road, for the opportunity of figuring this showy species, in whose nursery our drawing was taken in the month of May last, and from whom plants or seeds may be obtained.

The generic name is taken from *eutokos*, fruitful, and was applied to the genus by Mr. R. Brown, on account of the number of seeds borne by the *placentæ;* a character by which it is distinguished from *Nemophila.*

ON THE CULTURE OF RHODANTHE MANGLESII.

Few annuals have ever been introduced to our collections that can at all vie with the delightful little plant which forms the subject of the following brief remarks. All that we can conceive of beauty or loveliness in a plant—and in this respect plants maintain an absolute pre-eminence over all other created objects, unendowed with volitive motion,—seems concentrated in *Rhodanthe Manglesii.* Its sprightly, elegant habit, now erect, then tortuous, and anon curving and interweaving its slender branches in all directions, so as best to exhibit their charming blossoms,—with flowers of a brilliancy of hue, and compactness of form, which laugh to scorn all the labours of the most skilful artisans to imitate,—the petals of these being likewise of an extremely delicate and glossy texture, and of what is usually termed everlasting duration, render it an object of more than ordinary interest, and constitute it indeed a perfect gem of its class.

A tolerably faithful coloured representation of it may be seen by referring to p. 173 of the third volume of this work, but we regret to find that it has not yet been cultivated to the extent it merits. As any remarks on its cultivation from the individual by whom it was originally raised cannot prove otherwise than interesting, we proceed to give the substance of a communication furnished to us by Mr. D. Mackay, Gardener to R. Mangles, Esq.

The main purport of these observations is to inform cultivators how they may obtain flowering-plants of this species in the month of March, to effect which object, the seed should be sown in August, in a compost of decayed leaf-soil and light maiden earth, equal parts of each, filling the pot or pan in which it is to be sown to about half its depth with broken potsherds, to ensure good drainage. The seed should not be covered with more earth than will seclude it from light, and after sowing, it should be gently watered through the fine rose of a small watering pot, and placed in a temperature not lower than 60°, and of which 80° is the maximum degree. The pots should be examined once or twice daily, and the earth never allowed to become too dry, taking care to apply water of a temperature nearly equal to that of the house.

Under this treatment, the plants will make their appearance in three weeks or a month after the time of sowing, and while yet in the seed-leaf they should be removed to a part of the house as light and airy as possible, that they may not grow too weakly and slender. As soon as they have attained a sufficient size, they should be potted into small sixty-sized pots, three in each pot, using the compost before recommended, and bearing in mind that the pots cannot be too well drained at all stages of their growth.

It is difficult to assign any specific rules relative to the period at which they should be repotted, as much depends on the state of the weather, the mode of treatment, and other casualties; and some plants will require shifting a considerable time before others, although the seeds were sown at the same period. The surest criterion is the emission of roots through the drainage-hole at the bottom of the pot, upon observing which, they should immediately be shifted into larger pots. This will most probably occur during the month of November, at which time it will be particularly necessary to avoid placing them in confined or damp situations, or supplying them with an immoderate quantity of water.

Fire-heat should never be employed except in very severe weather, and then only to such a degree as to exclude frost. As a general rule, the winter temperature should never exceed 65°, nor be allowed to fall below 40°, as the slightest degree of frost is fatal to this plant. In the month of January they will again require shifting into pots of a still larger size, and at this period, decayed manure should be substituted for the leaf-mould, and a small portion of white sand added to the compost. In March they may receive another and final removal, which must be regulated according to their size, and after this, they will speedily flower. Those who are acquainted with this plant need not be informed what an acquisition a number of flowering specimens are to the greenhouse at this season, and few we think will be willing to forego the pleasure which such a display would afford on account of the slight trouble it requires.

Seeds sown in September, and managed according to the above directions, will generally produce finer specimens, though they will be somewhat later in flowering than those of the August sowing; and if another portion be sown in October, they will flower beautifully in the succeeding May. Finally, if a sowing is effected in March, the plants obtained from it will be fit for planting out in the flower-garden in May, where they will have a most enchanting effect during the autumnal months. After the plants raised from any of the sowings have been potted, they should be removed to a much cooler house, and when they are sufficiently established, should be placed on a shelf, or other elevated position, near the glass.

It should be observed, that, if during the time these plants are kept in the greenhouse, the remainder of the plants in the house require fumigating, those of this species should be removed during the operation, as they are always greatly injured, and most frequently destroyed by tobacco-smoke.

There is yet another fact connected with the cultivation of this species that is worth recording, which is, that the plants do not die immediately after producing their flowers, provided they are not allowed to mature seed. As soon, therefore, as the first flowers begin to fade, they should be plucked off; and when the whole of them have been removed, the plant should be repotted, which will have the effect of renovating it, and inducing it to flower again most abundantly.

To procure good seed, it must not be obtained from those plants which are growing in the open ground, unless they can conveniently be protected by a handglass or frame, as it will not ripen thoroughly when exposed to rain; so that it will be better to collect it from the plants which are retained in the greenhouse.

ON THE AGENCY OF SOLAR LIGHT.

The article upon the "Influence of Climate"—if it be perused with the interest which the subject, and the way in which it is treated, merit, will make a great impression upon the physiological gardener. We hope the writer will pursue the inquiry, and adduce many facts which will assist the practice of those amateurs who have few opportunities to obtain correct information concerning the native habitats, climes, and situation, as respects soil and exposure, of those plants which are the objects of their solicitude.

It is allowed that, under any circumstances, however favourable they may be, exotics, introduced to our greenhouses and stoves, are and must be, treated unnaturally. Were we able to apply the great natural agents—air, moisture, and temperature, in a manner and degree closely approaching to those of nature, certain it is that the intervention of a screen of glass would at once change the operation of solar light; for the rays, in their passage through that chemical medium, become more or less refracted, and decomposed. Now, if allowance be not made for the alterations so produced, there will be perpetual miscalculations; of this the following fact—of too frequent occurrence—will afford some degree of proof.

A fig-tree in a large pot, which had set two dozens, or more, of fruit, in a stove, remained healthy, and clothed with a richly verdant foliage; but, owing to the high temperature of the house, it lost every fig in succession, when about half swelled. When it was found that the figs could not be produced ripe in that situation, the tree was removed; and, the weather being fine and warm, it was placed in the open air, and—without due reflection—in a *sunny exposure.* In the house the rays had fallen upon the tree, which had no protecting screen, other than that of the glass; but the angle of the lights was not above 26 degrees, according to the French method of dividing the quadrant, or of 64 degrees according to that practised in England (see this subject elucidated at p. 257-8, vol. ii.); consequently the light was considerably broken, and its power much qualified. The fig-tree had not been exposed during many hours, ere every leaf was paralysed and drooped; in two or three days the verdure was changed to a sickly yellow, and the entire foliage perished!

Greenhouse plants placed abroad in their summer quarters have to pass through this trying ordeal; there is not one of them but suffers more or less; all are torpified; and, unless they be well shaded on their first exposure, lose much of their beauty, and become anything but objects of attraction during the best of the summer months.

From these considerations, the remarks on light—at p. 112—must be received with some qualification, and that upon the following ground:—first—the solar rays passing through glass, lose much of their direct power; second—a great volume of atmospheric moisture is maintained by the glass, which has no existence in the open air: the situation, therefore, of a plant is rendered unnatural; and, although the knowledge of the native habitats, and of their concomitants, must be essentially useful, as affording the basis of analogical reasoning, still, a vast deal must depend upon the observation of the gardener, and his adroit readiness to seize at once upon facts as they present themselves to his view. *General features* which are observable in nature, ought to be attentively regarded; thus, as is observed, plants which " are never subjected in the native localities to the immediate influence of solar light " ought not to be placed in a situation where they constantly receive the most powerful rays of the sun (113), but the *particular* effects which attend an artificial mode of treatment, must be observed with accurate minuteness. Plants exposed to the " skyey influences," be they surrounded, and buried, as it were, by underwood, in the deep recesses of forests and drundles, have still freedom of exposure to atmospheric agency, without the intervention of a transparent roof. But with us, in our glazed stoves, and surrounded by the natives of climates widely remote from each other, they have to conform to their new situation, and what is perhaps of greater consequence than it is generally thought to be, they have to support the influence of an atmosphere charged with the gaseous transpirations of other plants, which may be extremely pernicious. Upon what other ground can we account for the failure of the hardy heath tribe, unless it be indulged with an abode prepared exclusively for it? All greenhouse plants like air, a due supply of water, cleanliness, and correct attention; but the heaths, and some other subjects of extremely hardy and healthy habits naturally, droop, sicken, and fail, if they be made tenants in common with any other tribes. It may be said, that heaths and their congeners are " miffy," because they are impatient of water, of wind, and of the full south sun; that with care, and attentive regulation they might, and would, succeed among other plants. We grant the point, and admit that they might exist, as they do in parlours, during two or three seasons; but has ever any one seen a heath in full verdure, in the plenitude of health, so situated, growing and blooming for a succession of years? Such an exception may have *occurred*, but has rarely been witnessed.

Light acts powerfully upon plants at the different stages of their progress; the fertility of a vine depends mainly upon the solar direct ray operating upon the foliage during the growth of the fruit-bearing wood, but the fruit itself will swell to the greatest perfection when shaded by the foliage. Light is instrumental in promoting all the functions of the fruitful organs, but it operates inimically upon the expanded flower. Thus, if a blowing plant of *Streptocarpus Rexii* be exposed to the direct ray, the blossoms will be seen to shoot off, and become pendent on the pistillum, within a day or two after they have expanded. In the shade, on the contrary, we have frequently retained a plant in full flower, on a mantel-shelf, for a month, every individual blossom remaining expanded, and to all appearance perfect, for more than a week. Every fact proves that information upon native habits, climate, and soil, ought, if possible, to be obtained, and studied as the basis of a wise system of culture; but that success will chiefly depend upon the vigilant foresight (founded upon experience) of the gardener. What a system of education and observation does not this imply—and how ought men so educated to be rewarded by their employers!

This Paper is the favour of a highly respectable correspondent, and was received by us (as will be seen from its commencement,) shortly after the insertion of our first article on the 'Influence of Light.' The subjects to which it more particularly alludes, viz., the necessity of actual experience in the cultivation of plants, and of considering the obstruction which a glazed roof presents to the rays of solar light, are of the utmost importance, and had not been overlooked by us. We may, perhaps, be permitted a few further remarks on the latter of these points, for the former is too plain and palpable to require substantiating.

In the construction of houses for the reception of plants, there can be no more serious error than that of omitting to take into consideration the angle at which the rays of light are most freely and directly transmitted, allowing more or less declination to the roof, according to the aspect of the house, and the kinds of plants that are intended to be grown in it. To such an astonishing extent indeed is the light deflected by a glazed roof, that one which is constructed so flat as to render its inclination scarcely perceptible, is said to offer an obstruction to light of at least fifty per cent.

Gardeners too seldom allow this most vitally important circumstance due consideration, and as architects study rather the general appearance of such structures than their adaptation to the cultivation of plants, the hot-houses of this country are frequently little better than places of shelter from the inclemency of the climate, instead of affording with the shelter every facility for the liberal admission of solar light.

Those cultivators, however, who erect houses for the express purpose of growing any particular kind of plants which usually require some degree of shade, and think to incline the roof just so much as to render shading unnecessary, will be as egregiously in error as those who wholly neglect the subject; for it is very easy to afford the plants any required degree of shading during the summer, but it is impossible to supply the deficiency of solar light in the winter, which would undoubtedly be requisite if the roof were inclined only to suit the plants kept in the house through the summer months. Besides, the purpose of shading is not so truly effected by decreased declination of the roof, for in that case, the intensity of the light is only lessened by being wholly refracted, whereas, by interposing a denser medium, but at the proper inclination, some of the rays only are intercepted, while those which reach the plants are mitigated but not refracted, and consequently approximate nearer to the natural and desired method.

The case of the fig-tree cited by our respected correspondent is very *apropos;*

and if it were retained in the pot, which we have no reason to doubt,, affords a striking illustration of the subject in question. We have never witnessed such marked effects as those alluded to, although we have had frequent occasion to regret the sudden exposure of many plants to the full power of the sun.

As we have before shown, it is possible to injure some plants by an extreme degree of solar light as well as by a defalcation of it, and in this as in all other subjects, there is a happy medium to be attained, but it requires diligently to be sought after. We have presented our readers with the result of some of our researches, and we shall now be most happy to insert the communication of any correspondent whose inquiries have extended beyond our own, or who will further elucidate the subject in any of its numerous bearings.

THE REJECTIONS OF PLANTS.

When the theory relative to the excrementitious discharges of plants was first promulged, it naturally provoked a considerable degree of astonishment and incredulity among horticulturists of all classes; and many practical gardeners, under the impression that it was purely fallacious and absurd, made several attempts to refute it, and expose its alleged inconsistencies. As the controversy it occasioned has now in a great measure subsided, and the prejudices of different individuals have either been mollified or removed, it appears almost needless to bring forward any further arguments in its support than have already appeared in various works, more especially as the most convincing proofs of its correctness are daily occurring both in garden and field. That many plants and vegetables do emit an excrementitious slime, is a fact which we consider perfectly incontrovertible; how, otherwise, is the deterioration of any soil by growing in it successive crops of one kind of plant (notwithstanding it may be plentifully manured) to be accounted for? Is it not clear that the deterioration must proceed, not so much from the abstraction of nutritious, as from the transfusion of deleterious particles? But much more palpable evidence than this may be adduced; which is, that if plants, such as bulbs, are placed in a vessel of water in a growing state, and that water is not daily removed, in a few days the roots will be enveloped with a viscid, slimy substance, which has evidently exuded from them, and unless this is washed away by a fresh supply of water, the health of the bulbs will be materially injured. Assuming, then, this theory to be established, and almost universally admitted, we intend offering a few general remarks on the particular influence of vegetable fæces on certain plants, and then drawing from them some practical inferences relative to the cultivation of those plants which are most materially affected thereby.

It must be obvious to all who have investigated this subject, that some plants deteriorate the soil much sooner than others, and consequently that their rejections are either more copious, or of a more virulent character; but we are not aware that the cause of this difference has yet been explained. We are inclined to consider it to be the effects of repletion; or in other words, that those plants which are supplied with, and are capable of imbibing, a larger quantity of liquid sustenance, must necessarily eject a greater portion of that food in the form of excrement; and in this opinion we think we are borne out by the fact, that those plants which possess the strongest and most juicy roots, are productive of the greatest injury to the soil. If this hypothesis be correct, it follows that when by any means a plant is furnished with a superabundance of moisture, it will become so completely saturated, as to cause an unusual discharge of excrementitious matter; which, accumulating about the roots, renders the plant unhealthy, and is in fact the cause of what is usually termed "sour" soil, instead of the stagnant water, as is generally supposed. Plants in pots may frequently be observed to become sickly from this cause, and we have repeatedly taken them from the pot when such has been the case, removed part of the soil, and placed them in another pot with some fresh soil, without producing the slightest beneficial effects; but when the roots have been cleared of every particle of soil, and potted in a fresh compost, the plant has speedily recovered its usual health and luxuriance, and flourished with its wonted vigour and energy. Still further, we have seen orange trees, the roots of which had been so much injured by superfluous moisture as to lose every leaf, and in this state they have been taken from the soil, their roots carefully cleaned and *washed* several times in soapy or other water, after which they have been replaced in tubs in a fresh soil, and by being kept in a moist heat have speedily commenced growing, and in a short time have been again clothed with healthy and luxuriant foliage. Nor are orange trees alone to be mentioned here, for we have seen many other plants in a similarly unhealthy state treated in precisely the same manner, with equally beneficial results; and we believe the system of washing the roots of plants is frequently practised by the growers of Heartsease, though probably without any knowledge of the principles which render such a process necessary.

These facts, if they do not establish the opinion we have above expressed, at least demonstrate the existence of certain functions in plants which are capable of discharging any refuse matter, and also that these rejections are highly detrimental to the plant emitting them. The question therefore naturally arises, how are these injurious influences to be counteracted or rendered nugatory? In the first place it has been clearly ascertained, that the rejections of plants are only injurious to those of their own species; while they are perfectly innocuous, perhaps nutrimental, to all others. This is a very important discovery, and as far as kitchen-garden practice is concerned, establishes the propriety of attending to the alternation and rotation of crops. In the flower-garden, however, the case is widely different, the majority of the plants being of perennial duration; attention to this object is therefore of still greater importance, and its attainment more difficult, as no plant should be allowed to remain in the same spot for more than two years, otherwise it will inevitably degenerate. These remarks are especially applicable to bulbs and tubers, and we imagine that the advantages which these derive from an occasional removal from the soil, are not only attributable to what is usually termed "a season of rest," but also to a change of soil; hence, the good effects of such treatment will be greatly diminished, if this latter fact is not taken into consideration and acted upon.

Plants in pots are still more materially affected by their own rejections, on account of their roots being more confined, and consequently unable to extend themselves into uncontaminated soil; but even in this case there are means of removing them, or counteracting their effects, which we shall now explain. It has been asserted, but we scarcely think it has been sufficiently demonstrated, that this excrementitious matter is voided solely by the tips or extremities of the rootlets; and if this be correct, the importance of their being repotted annually must be very evident. These rootlets, it is well known, are usually found at the sides of the pots, and by removing a portion of the external soil of the ball, this injurious matter will be entirely taken away, and fresh soil may be substituted in its place. The fibrous roots of many plants likewise lie near the surface of the soil, and with such plants the operation called "top-dressing" has a beneficial effect, similar to that of potting with others, provided always a portion of the surface-soil be taken away before any fresh earth is added.

But there are other means of removing or neutralising these rejections, a knowledge of which is equally essential to the gardener or cultivator of plants; and these are, a free circulation of water, and a thorough exposure to the air. By the advantage resulting from the former of these processes, it will be seen that an efficient drainage to plants in pots is necessary for other purposes than are usually considered; and that a stagnation of water about the roots, besides saturating the plants, and thus, as we conceive, making their rejections more abundant, causes a retention of this noxious feculence in the pots, which is highly pernicious and sometimes destructive to the plants.

By freely exposing soil to the varied influences of the atmosphere, it has been proved that the rejections of plants which it contains are either evaporated or decomposed. Hence the great advantage of spreading out soils to the air, and frequently turning them previously to using them for potting. Perhaps also this may be one instance of the utility of the operation of digging, and a still more prominent one in that of ridging. It is certain, however, that the practice of throwing away expensive and valuable soils after they have once been used for potting plants, is a most injudicious and wasteful proceeding; since, by exposing them to the air for one or more years, and repeatedly turning them, they might again be rendered available for the same purpose; and with a slight addition of well-rotted manure to enrich them, would be equally suitable and nutritive to the same or any other similar kind of plants. We would especially direct the attention of those of our readers who have to purchase soils to this latter declaration; and to establish the truth of it, we need only say, that were this theory not correct, every portion of cultivated ground would have long since become a barren waste, and the most essential and valuable vegetable productions of the earth would now be unknown.

The practice of burning soils or subjecting them to the action of intense heat, has been recommended by some for destroying extraneous matters; but however useful this may be with clayey earth, to promote pulverization, we cannot think it worthy of adoption for the purpose here alluded to; and we would recommend exposure to the air as one of the most simple, and at the same time the most efficacious, method of regenerating all soils that are impregnated with the rejections of plants. Our objects in these remarks has been to place the most prominent parts of this subject before our readers in their true light, with their practical consequences and suggestions; and as our limits have not permitted us to enter so minutely into the consideration of it as it deserves, we shall perhaps revert to it at some future opportunity; we now leave it to the candid attention and investigation of the reader, convinced that a knowledge of it is of the utmost importance to the practical cultivator.

NEW AND RARE PLANTS,

FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR SEPTEMBER.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ).

THE MELASTOMA TRIBE (*Melastomaceæ*).

Arthrostemma versicolor. Changeable-flowered Arthrostemma. A most interesting little half-shrubby stove plant, recently raised in the Glasgow Botanic Garden, from seeds sent there by Mr. Tweedie, but had previously been discovered by Mr. M'Rae, collector to the Horticultural Society, at St. Catharine, on the eastern coast of Brazil. It bears a great number of pretty pink blossoms from the extremities of the shoots; they are produced in the months of July and August, and render it very ornamental. It is the *Rhexia versicolor* of Dr. Lindley. *Bot. Mag.* 3678.

THE ROSE TRIBE (*Rosaceæ*).

Potentilla glabra. Glabrous Potentilla. This is by no means a showy, although a shrubby species of the genus. It is dwarf, entirely smooth, and the branches incline downwards, producing their neat yellowish-white flowers at their extremities. Being quite hardy, it is said to form an interesting feature among the various species of *Cistus*, where these are cultivated collectively. Siberia is its native country, and it was first imported by Messrs. Loddiges, who state in the Botanical Cabinet that it is somewhat difficult of propagation. We presume it may be increased by layers. *Bot. Mag.* 3676.

THE LOBELIA TRIBE (*Lobeliaceæ*).

Lobelia fenestralis. A rather pretty species, bearing a great number of neat purple flowers in a terminal spike, the latter being interspersed with leaves, which are nearly amplexicaul, and much jagged. It was originally found by Humboldt and Bonpland in the temperate parts of Mexico, but seeds obtained from the same country have recently been communicated to the Horticultural Society, by G. F. Dickson, Esq. The seeds are recommended to be sown about the end of June in a decayed hotbed, with a very slight covering of sand, and kept through the winter in pots in the greenhouse, either placing them in larger pots, or planting them out in the open border in the spring, when they will flower in July and September. *Bot. Reg.* 47.

CLASS II.—PLANTS WITH ONE COTYLEDON (MONOCOTYLEDONEÆ).

THE NARCISSUS TRIBE (*Amaryllideæ*).

Ismene macleana. Mr. M'Lean's Amancaes. This is a new and delightfully fragrant species, the bulbs of which were sent to the Glasgow Botanic Garden, from Lima, by John M'Lean, Esq., after whom it has been named. It is a strong growing species, and produces a large cluster of showy whitish-yellow flowers; requiring the temperature of the stove, or probably only of the greenhouse, and the usual treatment of Cape bulbs. *Bot. Mag.* 3675.

THE CORN-FLAG TRIBE (*Iridaceæ*).

Gladiolus mortonius. Mr. Morton's Gladiolus. This new species has been figured from a specimen in the collection of the Hon. and Rev. William Herbert of Spofforth, who, we hear with pleasure, is now devoting his enlightened attention to the *Irideæ*. It was originally received by Messrs. Rollison from the eastern coast of South Africa, and is named after the gentleman who transmitted it. The flowers are of a pale delicate rose colour, but beautifully blended with white, which renders them very ornamental. *Bot. Mag.* 3680.

THE ORCHIS TRIBE (*Orchidaceæ*).

Oncidium raniferum. Frog Oncidium. One of the smallest flowering of all Oncidiums, but certainly an interesting little plant, and most prolific in its production of flowers. They are displayed in pendent racemes, and not erect ones, as is the usual habit. They are principally of a yellow colour, the upper part of the lip being dark brown, and of so curious a construction as to suggest the name, which is given from its supposed resemblance to a frog. This species is a native of Brazil, but occurs among other places in the damp forests of Bananal, and M. Descourlitz observes that it attaches itself to those branches only which are within twelve feet of the ground. It requires a hot and damp stove during the growing season. *Bot. Reg.* 48.

NOTICES OF NEW AND RARE PLANTS

IN FLOWER IN THE PRINCIPAL NURSERIES IN THE VICINITY OF LONDON.

Messrs. Henderson's, Pine Apple Place. *Gardoquia multiflora.* This is a rare and elegant species, well adapted either for stove or greenhouse purposes. A great profusion of neat purple blossoms is exhibited during the autumnal months, and on this account it will be a welcome addition to any collection. Its usual height is about one foot or eighteen inches, its habits very slender and graceful, and the flowers are nearly the size of those of *G. Hookerii.* It is most beautifully in flower in the greenhouse of this nursery. *Tropæolum peregrinum.* This species has now been in our collections for two or three years, but we were particularly struck with the extraordinary beauty of a specimen in the collection of these gentlemen. Its bold character, handsome foliage, and delicately fringed yellow blossoms, give it a very ornamental appearance when well cultivated, and render it little inferior in some respects, and certainly superior in others, to *T. tricolorum.* It thrives well in the open ground during the summer season, and is always a valuable ornament to the greenhouse. Several excellent varieties of *Petunia* are most brilliantly in flower at this nursery, some of which are of a very superior character, and have flowers of an exquisitely rich colour.

Mr. Knight's, Chelsea. *Funckia albo marginata.* A very interesting new Japan species, discovered and introduced by Dr. Siebold, and at present rather rare. It is an ornamental border-plant, with fine spreading foliage, which has a stripe of yellowish white round its margins, and forms a pleasing contrast to the pale lilac-coloured flowers, which are produced numerously. It is flowering in a pot in the above nursery, and is treated as a half-hardy plant, but will probably succeed in the open border with a slight protection in the winter. *Ionopsis utricularioides.* A rare and extremely elegant little orchidaceous plant, the minuteness of the flowers of which is sufficiently counterbalanced by their delicate hue, and the graceful manner in which they are produced. It is unquestionably a favourite with all lovers of Orchidaceæ, though far from being a showy species. It would seem to grow best when attached to a piece of wood, and suspended from the roof of the house, but will thrive almost equally well in a pot, if due caution is exercised in preserving it from superabundant moisture.

Messrs. Loddiges, Hackney. *Stanhopea Wardii.* This is a new and distinct species, received by these gentlemen from La Guayra, and named in compliment to the gentleman by whom it was sent. The flowers are not quite so large as those of some other species, but are very handsome, the ground colour being a dull yellow, with a few spots of brown; the labellum is of the richest atrosanguineous hue, surrounded by a circle of bright orange, and the flowers are produced in pendulous racemes, indefinite in number. It has recently flowered at this nursery, and other flowers will again shortly be developed. *Dendrobium Gibsonii.* This very lovely species is now splendidly in flower in the collection of these gentlemen, and the richness and brilliancy of the colour of its flowers impart to it an air of elegance and beauty rarely surpassed. *Epidendrum tenuiflorum.* This species has been most appropriately named, for the sepals and petals of its flowers are extremely narrow and slender. In habit it approaches nearest to *E. diffusum*, like that species also producing its flowers abundantly; but these latter are almost devoid of interest, at least of beauty.

Mr. Low's, Clapton. *Salvia patens.* This is a highly interesting and well-distinguished species, raised in the nursery just mentioned, from seeds imported from Mexico. It has rather large, broad, and rugose foliage, and the flowers are produced freely in terminal spikes, both from the principal and lateral shoots. They are of a most intense and almost inimitable blue colour, which for loveliness and real beauty we have seldom seen excelled in any other flower, and we can candidly pronounce it to be a species of sterling merit. It is most probably a half-hardy perennial, as it is at present growing and flowering in the open ground. Two other plants, apparently new species of *Lobelia*, are also now flowering with this gentleman, which were raised from seeds received with the other from the same quarter, one of which has pink flowers of a very neat character, and is certainly worthy of notice and cultivation. Mr. Low also possesses a new species of *Verbena*, raised from imported seeds, the flowers of which are of a beautiful and delicate rose-colour, but materially different from those of every other species or variety, and of a larger size than those of any we have previously seen.

Messrs. Rollison's, Tooting. In our last number we were led into an error respecting the habits of the new species of *Stanhopea*, which flowered in the nursery of these gentlemen, as we there stated that the flowers were produced in pairs, a circumstance which we were induced to believe from the rather singular coincidence of the plant producing four spikes, each of which bore only two flowers; we have since ascertained that the scape is continuous, and consequently that the number of flowers depends on local circumstances, and the strength of the plant. *Tweedia floribunda.* An interesting new greenhouse plant, with numerous pretty pink blossoms, which appear in a terminal spike. The flowers are not large, but of a very neat character, and by no means unornamental. *Crucianella stylosa.* An exceedingly pretty little herbaceous plant, of trailing habits, with dense corymbs of elegant pink flowers, which vie in beauty with almost any species of *Verbena*, although they are much smaller. It is an imported species, and was raised from seeds in the garden of these gentlemen, where it is at this time flowering most beautifully.

Mr. Young's, Epsom. *Chelone Mexicana.* This is a new and ornamental species obtained from seeds of Mexican importation. It is remarkable for the great length of its slender foliage, and differs in this respect from *C. barbata*, as well as in the colour of its flowers, which is of a much lighter crimson than that of the species just named. It is an interesting addition to our half-hardy herbaceous plants, and ranks next in value to the splendid species of *Pentstemon.* This gentleman possesses plants of it now finely in flower. *Verbena Neillii.* A showy lilac-coloured species, resembling *V. Drummondii,* but superior to it in the size and colour of its flowers. It is named after Mr. Neil of Edinburgh, and is well worthy of a place in the flower-garden. *Verbena chamœdrifolia superba.* This is indeed one of the most superb little plants with which we are acquainted. The flowers are of a much darker colour than those of the original species, and equally, if not more brilliant. As a flower-garden ornament, nothing can surpass it in beauty, and it will assuredly become a favourite when it is sufficiently known.

NOTICES ON THE CULTURE OF NEW AND RARE PLANTS

IN THE PRINCIPAL NURSERIES IN THE VICINITY OF LONDON.

On the Advantages of removing Greenhouse Plants to the open ground in the Summer Season.

There are many species of plants which, in their natural localities, are of very luxuriant habits, and exceedingly ornamental, but when they are confined to a pot, and kept constantly beneath a glazed roof, assume an unhealthy appearance, acquire stunted and unnatural habits, and are divested of nearly all their beauty, both of foliage and flowers. To these a full exposure to the atmospheric influences during a brief period, and an abundance of soil in which their roots can ramify and extend themselves without obstruction, would be highly advantageous.

On the other hand, it must not be forgotten that there are some which, if treated in this manner, would attain to an inconvenient size, and instead of becoming more ornamental, would actually grow unsightly and cumbersome. It must be evident to every intelligent cultivator, that it would neither be expedient nor desirable to have plants of their natural size in our greenhouses and stoves; consequently, those plants which grow naturally to the size of trees, should be very cautiously subjected to the treatment we are about to recommend. It is to what are usually termed ‘shrubs’ that the following remarks will chiefly apply, as there will be no danger of these becoming too large for ornamental purposes.

In several of the London nurseries we have seen greenhouse, and even stove plants of the latter description, placed out in the months of June or July in a well-prepared border, and again potted in September; and it would be difficult to imagine, unless it were witnessed, the extraordinarily beneficial effects which such a mode of treatment produces. Plants that were previously in a languishing and unhealthy state, have in a few weeks been completely renovated, their proper and natural health and vigour has been restored, and when again removed into pots, the change in their appearance has been so striking, as to render it almost impossible to recognise the individual specimens.

Nor is this system applicable to sickly plants alone. The universal deterioration consequent on keeping any kind of plants in pots, may be speedily remedied by a few weeks' application of this practice. We witnessed a marked instance of its utility in the nursery of Mr. Knight in the present year on a plant of *Anthrocercis viscosa.* When planted out, the specimen was in an apparently healthy condition, and certainly as luxuriant as the generality of other plants of the same species. After it had been in the open ground a short time, it was again potted, and through the autumnal months it has been one of the most beautiful objects of the kind we ever remember to have seen. Its large, verdant, and luxuriant foliage, but more especially its immense flowers, which were nearly double the usual size, contrasted most strikingly with the appearance of those which had not been thus treated.

This case is mentioned, not by any means as an isolated one, for we could adduce proofs innumerable in support of the practice, but because the effects produced were upon a healthy plant, and were so speedily manifested, and so clearly attributable to the change of situation and circumstances. In sickly plants, the change is unquestionably much more marked, but we wish to show the propriety of applying the system to such plants as, from their appearance, do not seem to require it.

The utility of this mode of treatment being thus demonstrated from fact, it remains to state the method of carrying it into effect; and although this appears exceedingly simple, there are certain principles to be considered in adopting it, which, if overlooked, would lessen, if not completely nullify, its advantages. The period of the year at which the plants should thus be removed, is of great importance. The month of June or July is the earliest period at which this operation should be attempted, as these plants are usually extremely tender at this season, and the slightest frost would probably destroy them. The state of the weather, and the time of the day at which they are planted, should not be overlooked. A dull, cloudy atmosphere will be highly advantageous, and the evening should always be chosen for the purpose, because the plants will not then be exposed to the action of the sun immediately after planting. For several days subsequent to their removal, they will require some slight degree of shading, and they must be very gradually exposed to the unreserved influences of the atmosphere, otherwise they will be severely injured.

The nature of the soil in which they are planted should likewise be a paramount consideration. Whatever may be the habits of the plants, they should always be placed in a more retentive soil than they were allowed when in pots, as no superfluity of moisture need be feared at this season, but rather the contrary. If the compost is of a slightly adhesive nature, little or no water will be required; but when the weather is particularly dry, it will be advisable to syringe the plants occasionally and freely in the evening of the day.

The advantages of planting them in an adhesive soil will be fully experienced when they are required to be removed for potting, as they may then be taken up without injuring the roots, a circumstance which is particularly desirable, and to effect which much care should be bestowed. They will of course require larger pots after being thus treated, but in collections where they are grown solely for ornament, this will never be considered an objection, as a most decided improvement in every respect will at once be evident.

Some of the best heath cultivators have found this to be the best, and indeed the only means of renovating these plants, when they begin to degenerate or look sickly; and if the practice were more frequently adopted, both with these and all other plants of a suitable character, the beauty of our greenhouse plants would be greatly heightened by that delightful appearance of healthy luxuriance which is in itself so gratifying to the eye, even when unaccompanied by the more gaudy and varied display of flowers.

OPERATIONS FOR OCTOBER.

THE decay and decidence of the leaves—that sure premonitory sign of approaching winter—should remind the gardener to guard against the occurrence of slight frosts, which are by no means unusual this month. One night's exposure to a trifling degree of frost would prove fatal to many tender plants; therefore all those which are incapable of enduring it should be immediately afforded some efficient shelter, and this not only when the appearance of the weather seems more urgently to demand it, but every night, as the mornings are frequently frosty at this season when least expected.

In all plant structures, fire-heat and water should be alike employed with great caution, for, as we intimated last month, the perpetual spring desired to be maintained in our stoves is a most egregious and dangerous error in cultivation, which it were well if practical men could be prevailed upon to regard in its true light. We do not contend for the total abandonment of artificial heat, for this would be impossible, but we wish to see a diminution of temperature commensurate with that of the external atmosphere.

Thus, in the warmer months of the year, it will invariably be found that the temperature of a plant-house is twenty-five or more degrees higher than that of the external air if the house is only very slightly ventilated, and where air is totally excluded it will be proportionally increased. Hence, in the winter months, when the mean temperature of the atmosphere is 40 degrees, that of a plant-house may be estimated at 65 degrees or 60 degrees as a minimum; and when that of the external air falls to 20 degrees, the house will still retain a temperature of 45 degrees, which is amply sufficient for preserving most plants from frost. When, however, the mean temperature of the house is only 45 degrees, plants that are placed very near to the glass may probably be injured by extreme frost, and, to prevent this, nets or other covering should be placed over the roof; these will effectually exclude a moderate degree of frost, and be far more useful than the application of fire-heat, which should only be resorted to in cases of urgency, and when damp is required to be expelled.

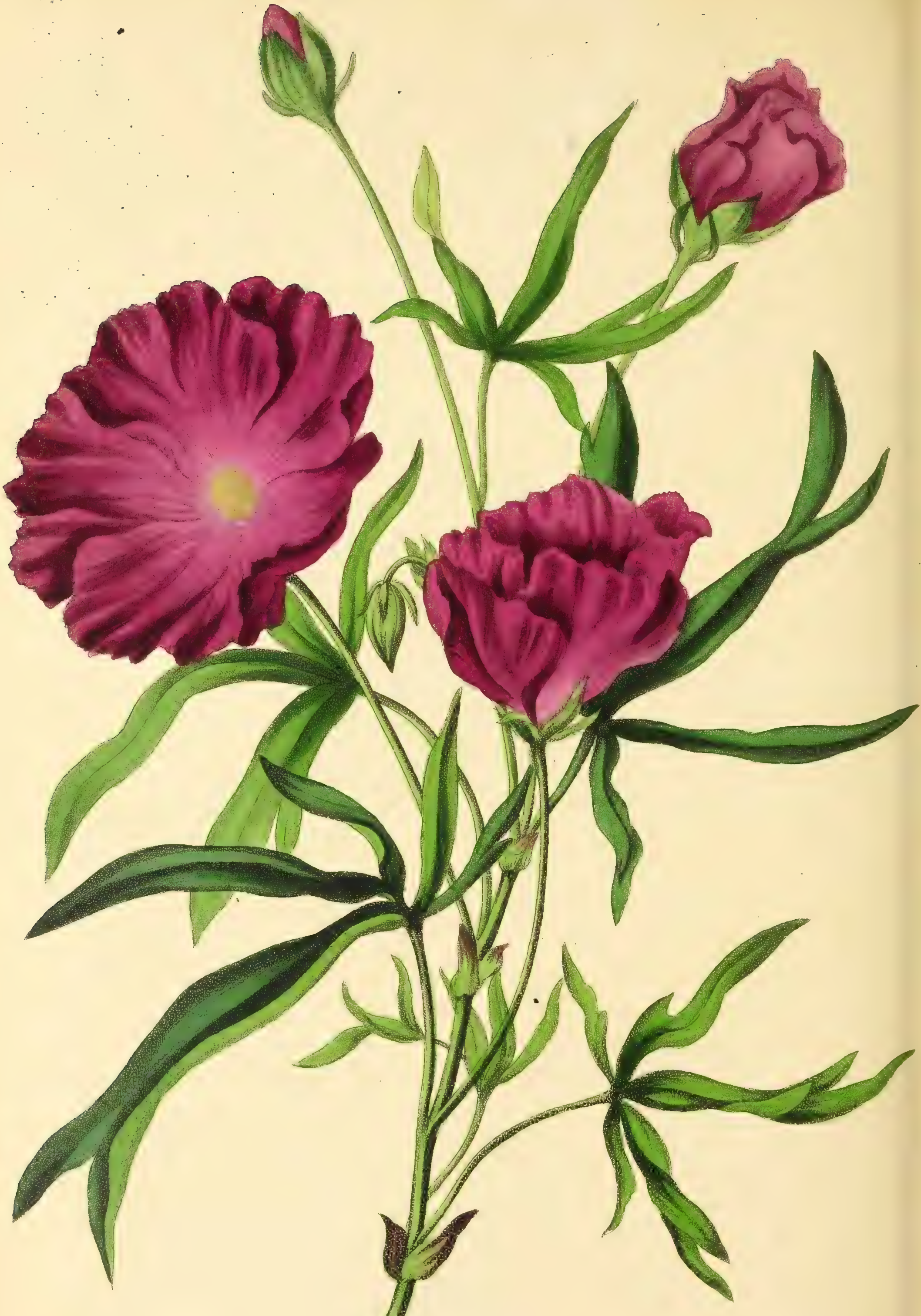
We are thoroughly convinced of the inexpediency of employing half the fire-heat which is usually considered necessary, and we earnestly recommend our readers, both on the ground of economy and for the benefit of their plants, to commence this season by dispensing with as much of it as can be done consistently with the safety and health of the plants.

Forcing is of course not embraced by the above remarks, and this may be commenced towards the end of the month on roses, kalmias, azaleas, &c., that are required to flower about Christmas, but it should always be conducted in pits or frames, as a moist bottom-heat may be insured in such situations, which is highly favourable, if not essential, to successful results. No plants should be attempted to be forced but such as have had at least two months' previous rest, otherwise the display of flowers will be very defective.

All kinds of plant-houses should be ventilated as much as possible, varying the degree of it according to the nature of the plants: this will tend to preserve them from damp, and in this respect will supersede the application of fire-heat. No plants should be syringed or watered over the leaves at this season, unless for the removal of filth which may accumulate on them, in which case they should be carefully dried by placing them in an airy part of the house. Water the roots only when the soil exhibits evident signs of requiring it.

Bulbs that are intended for early flowering, should now be potted, and plunged in old bark, covering them with three inches of the same material under the protection of a pit or frame; when they appear above this surface, they should be gradually exposed to light, and placed in a gentle heat till they flower, upon which they may be removed to any required situation. *Amaryllises*, and other stove bulbs intended for the same purpose, should also be potted, and at once placed in heat, watering them at first cautiously, but more liberally after they have commenced growing.

In the flower-garden, beds intended for tulips and other bulbs should be prepared, and the soil turned frequently to expose it as much as possible to the influence of the atmosphere. This will in a great measure dissipate all extraneous and injurious matters, and render it much more suitable and nutritive. *Pentstemons*, *verbenas*, and all half-hardy plants, should be removed to the greenhouse or frame, the lights of which latter may be left open in fine weather, taking care to close them at night, and during rain, for excessive or continued damp is almost as prejudicial as frost, although its effects are not so immediately visible. Young plants of *Petunias*, common *Pelargoniums*, &c., should be exposed to the open air when the weather is favourable, to prevent them from growing, as the shoots which are formed after this period seldom survive the winter, and are frequently the cause of destruction to the whole plant. *Dahlias* should be taken up in fine weather towards the end of the month, carefully dried, and stored in straw in a dry and convenient place.



Nuttallia grandiflora.

NUTTALLIA GRANDIFLORA.

(LARGE-FLOWERED NUTTALLIA.)

CLASS.	ORDER.
MONADELPHIA.	POLYANDRIA.

NATURAL ORDER.
MALVACEÆ.

Generic Character.—*Calyx* simple, (occasionally double, or even three-leaved,) five-lobed. *Capsules* for the most part one-seeded, collected together in rings round the receptacle.

Specific Character.—*Plant* an herbaceous perennial, growing from one to two feet high. *Stems* much branched, half-erect, roundish. *Leaves* petiolate, digitate; lobes occasionally deeply toothed, with ovate, amplexicaul bracteas at their base. *Calyx* five-parted, hairy, with two or three smaller linear bracts. *Corolla* expansive, of five rich, purplish-crimson, emarginate petals.

It is a singular fact, but one which philosophers would probably experience no difficulty in accounting for, that mankind invariably feel a more lively and permanent interest in those objects, for the attainment and preservation of which they expend most money and attention. So notoriously is this the case with the lovers of plants, that however truly valuable any plant that is introduced to this country may be, as soon as it is found to be of easy cultivation, and may be procured for a small sum, it loses all its interest and value with the principal patrons of floriculture, and soon vanishes from their collections.

Were real beauty—as it ought to be—the criterion of value in flowers, many a lovely plant would be saved from oblivion, and others which are new would need only to be seen to recommend themselves to general notice. But it is almost sufficient to check the desire of any of the leading plant cultivators for possessing any plant, to inform them that it is perfectly hardy, and does not require the slightest trouble in its cultivation and management.

There is, however, a numerous—and by far the most numerous—class of floriculturists, to whom such characters as those above-mentioned are the greatest recommendations a plant can possess, provided always that it has a tolerable share of beauty, and to these we refer the extremely beautiful hardy herbaceous plant here represented. The subject of our present drawing is one of those charming productions with which the prolific soil of the New World is constantly rewarding the zeal and intrepidity of European and American botanists, and we are not aware of its ever having been previously figured in any other work. Its large, rich-coloured flowers, to which a great degree of elegance and neatness is imparted by their margins being so delicately fimbriated, make an excellent display in the flower-border during the summer months; and, besides being very abundant, they are produced in constant succession for a great length of time.

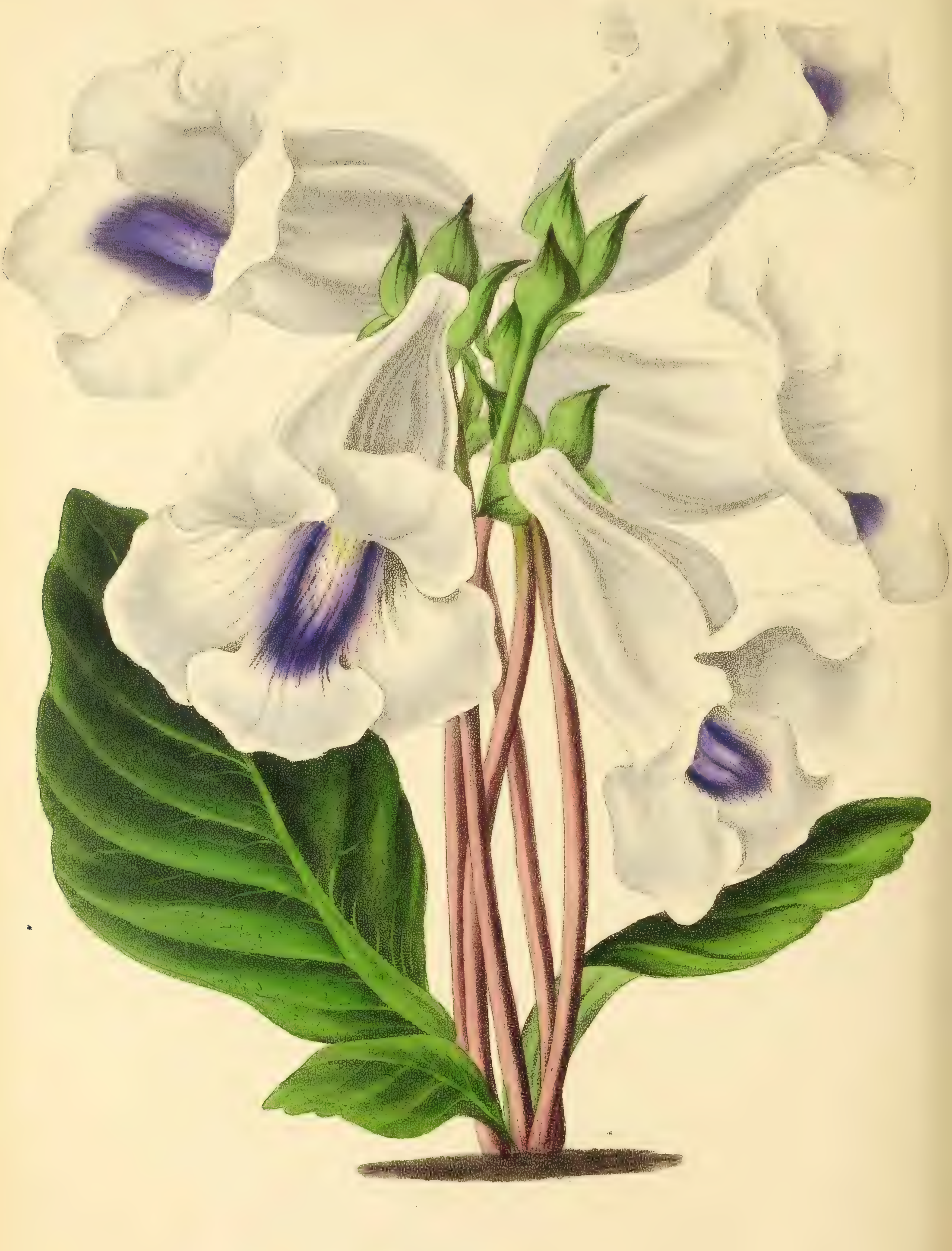
It appears to thrive best in a somewhat sheltered situation, though we believe it to be quite hardy. Any open, loamy soil will be found suitable, and, under favourable circumstances, it will sometimes attain the height of three or four feet, all its branches being most profusely studded with flowers. In such a state, it is not easy to conceive of a more enchanting object, and few herbaceous plants outrival it in beauty. It should be observed, that it has a very ornamental appearance when kept in a pot, and treated as a greenhouse plant; and though shelter from cold is useful, it delights in a full exposure to solar light.

Seeds of it ripen freely and abundantly, and, if sown as soon as ripe in shallow pans, potting the young plants when they have perfected their seed-leaves, and keeping them through the winter in a frame, they will be ready for planting out in the spring, and will most probably flower in the ensuing summer or autumn. It may also be increased from cuttings of the young shoots, taking care to avoid those which evince any disposition to flower.

The nursery of Mr. Young, Epsom, supplied the sample of the present drawing, of whom, and of most London nurserymen, it may be obtained.

The generic name was given in honour of Mr. Nuttall, a worthy and persevering American botanist and traveller, and professor of mineralogy in the University of Cambridge in New England, North America; to whom we are indebted for our knowledge of a portion of the American Flora.

The specific name refers to the large size of the flowers, compared with those of other species, and we believe this plant is sometimes called *N. digitata.*



Gloxinia maxima.

GLOXINIA MAXIMA.

(LARGEST-FLOWERED GLOXINIA.)

CLASS.
DIDYNAMIA.

ORDER.
ANGIOSPERMIA.

NATURAL ORDER.
GESNERIACEÆ.

GENERIC CHARACTER.—*Calyx* superior, five-leaved. *Corolla* campanulate; limb oblique. *Filaments* with their rudiments inserted in the tube of the corolla. *Capsule* one-celled. *Receptacle* with two lobes.

SPECIFIC CHARACTER.—*Herb* stemless, deciduous. *Leaves* radical, ovately oblong, slightly serrated, bluntish, thickly clothed with short white hairs. *Calyx* green, consisting of five sepals; lobes expansive, oblong, blunt. *Corolla* large, bluish-white; throat bright azure colour, hairy internally.

CONSIDERING the unbounded extent to which the cross-fertilization of many kinds of plants is capable of being carried, and that some of the most showy ornaments of our gardens and plant-houses have been obtained in this manner, it is surprising that the practice is not more generally adopted by cultivators than it has hitherto been. The very trifling trouble it occasions, and the more than adequate compensation it occasionally affords, in the gratification of having been the means of imparting an additional charm to the study of floriculture, by raising a new and beautiful variety, or even a species of any kind of plant, would appear sufficient to incite greater attention to the practice, and make every cultivator emulous of attaining some distinction in so interesting and commendable a pursuit.

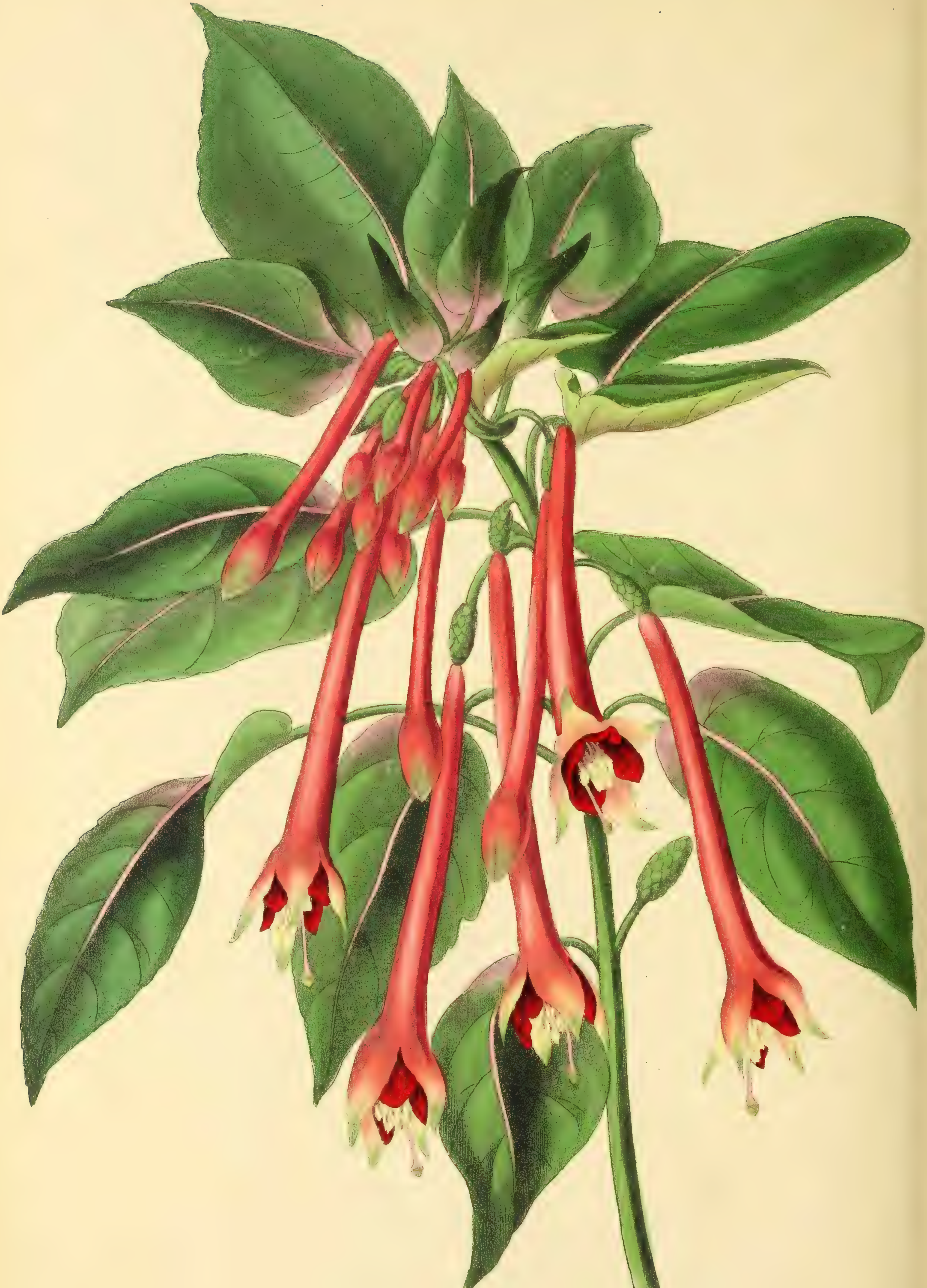
As an illustration of the advantages which may be expected to result from such a process, we have to introduce a new species of *Gloxinia*, which has been raised in the Epsom nursery from impregnation between a purple species and a white one, *G. speciosa* and *G. candida;* but, though the colour of its flowers participates in some slight and modified degree of that of both its parents, it is evidently sufficiently distinct from all other known species to warrant the application of a specific name expressive of the large size of its flowers.

All cultivators of the genus *Gloxinia*—and we imagine that there are few persons who possess a plant-stove who do not cultivate some species of it—will, we are convinced, be anxious to obtain this beautiful plant, and we are happy to inform them that it is likely soon to be sold at a cheap rate; for, independently of the size of its flowers, their striking beauty claims for it particular attention. The exquisite azurean tint of the throat of its flowers is really inimitable, and wholly defies the skill of the artist; while the bluish-white colour of the other parts of the corolla, contributes much to exhibit that just mentioned to the greatest advantage.

Ample directions for the cultivation of Gloxinias may be found at page 127 of the fourth volume of this Magazine, where, also, some interesting particulars relative to that subject are communicated. To these we have nothing at present to add, any further than to recommend the practice of hybridizing them, seeing that it has been attended with such very successful and pleasing results.

The plant which formed the subject of our present figure has flowered most profusely and repeatedly in the nursery of Mr. Young, Epsom, and the drawing was obtained in the month of July last.

The generic name was applied by L'Héritier to commemorate Dr. Benjamin Peter Gloxin, of Colmar, who published a work on the genus *Martynia*, and some other of its allies.



Fuchsia fulgens

FUCHSIA FULGENS.

(BRILLIANT FUCHSIA.)

CLASS.
OCTANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
ONAGRACEÆ.

Generic Character.—See vol. iv. p. 75.

Specific Character.—*Plant* a robust shrub. *Branches* smooth. *Leaves* opposite, cordately ovate, acute, denticulate, smooth. *Peduncles* axillary, shorter than the flowers. *Flowers* in terminal racemes. *Calyx* five-lobed; lobes ovato-lanceolate, acute. *Petals* somewhat acute, exceeding the calyx. *Ovary* green, covered with small excrescences.

The highly ornamental and favourite genus of which this splendid plant forms a part, contains no species which can at all vie with the present in beauty or magnificence. The very extraordinary size and luxuriance of its stems and foliage, combined with the great length and striking brilliancy of the colour of its flowers, together with the fact of their being produced so abundantly, and also in terminal racemes, have rendered it exceedingly popular during the present year among all the devotees of floriculture, and, in a very short time, it will most probably be in the hands of every plant cultivator.

There are those—and we have met with several of them—who, from some inexplicable cause, endeavour to depreciate its value and merits, and assert it to be inferior in beauty to some of the species and varieties previously known. It is true that the flowers do not possess that exquisite glossiness of hue which is so very interesting in some other species, nor is the corolla of that rich purple which contrasts so strikingly with the sepals of the calyx; but even the colour of the flowers is unquestionably more brilliant, and the character of the plant is infinitely superior to that of any other species with which we are are acquainted. Some have likewise affirmed that it is not a species of *Fuchsia* at all, but assuredly the difference in its appearance and habits is not sufficiently great to warrant such an assumption.

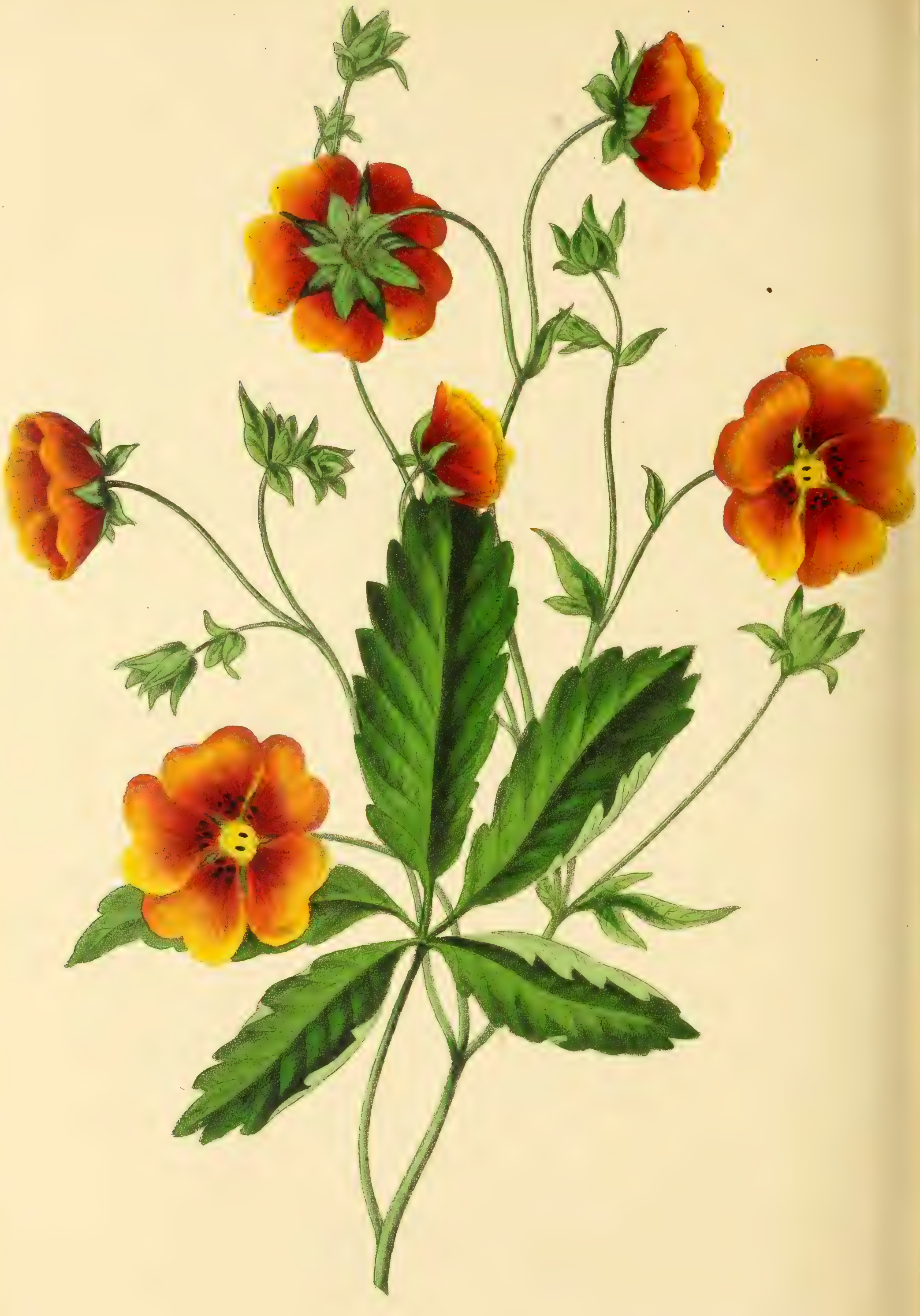
We have been informed, from a respectable source, that there is a considerable variation in the character of the roots of this species, as these most usually assume a tuberous form, but are sometimes found entirely destitute of tubers, and perfectly fibrous. How far this may be correct, we have had no opportunity of investigating, since we have never seen this plant with any other than tuberous roots; but it is asserted that those with fibrous roots may be propagated with much greater facility, as the others require a considerably longer period to form their tubers; and hence the distinction is of some importance where a large stock is desired.

There appears to be some little art in growing this beautiful plant to perfection, but sufficient knowledge of it is not yet possessed to furnish any very important data. As soon as it commences growing in the spring, some cultivators have placed it in a house where a trifling degree of artificial heat is kept; but we apprehend such a system of treatment is decidedly injurious, and would recommend an immediate removal into a larger pot, and a place in the greenhouse or frame. An abundance of pot room appears to be an indispensable requisite, and we have no doubt it would make a most splendid conservatory plant; that is, that it is well adapted for planting in the border of the conservatory or greenhouse. A good loamy soil, with a small proportion of heath mould and white sand, and a slight addition of decayed manure, will be found most suitable; and, if kept in a pot, the plant should be frequently shifted as it progresses in size.

It may be very readily propagated from cuttings, and most probably from seeds likewise, if the latter can be properly matured; the cuttings merely requiring to be planted in sandy loam, covered with a hand-glass, and kept in a gentle heat.

Its native country is Mexico, from whence a number of plants were brought to London in the autumn of 1837; and, if the lateral shoots are allowed to remain, it will flower throughout the greater part of the season.

For our drawing we are indebted to Mr. Low, of the Clapton nursery, where it was taken in the month of July of the present year. It may be purchased for a moderate sum of any nurseryman.



Potentilla ferruginea

6

POTENTILLA FERRUGINEA.

(RUSTY-BROWN FLOWERED CINQUEFOIL.)

CLASS.
ICOSANDRIA.

ORDER.
POLYGYNIA.

NATURAL ORDER.
ROSACEÆ.

Generic Character.—*Calyx* tubular, concave, limb four to five toothed, with four or five bracteæ. *Petals* four or five. *Stamens* indefinite. *Carpella* indefinite, inclining to the side of the style, attached to the receptacle, persistent, dry, capitate. *Seed* protruding.

Specific Character.—*Plant* perennial, herbaceous, growing from eighteen inches to three feet high. *Stems* numerous, much branched. *Leaves* petiolate, pedate, rugose, serrated; lobes nearly equal, slightly hairy. *Calyx* of five, ovately lanceolate, acute segments, with five similar bracteæ. *Corolla* rusty-brown, approaching to orange.

In almost every flower-bed or border throughout the more populous parts of this country may be seen some one or other of the very interesting species of *Potentilla.* There is a simple beauty and elegance in their habits and flowers which seems to ensure for them universal esteem and cultivation, and there can be little doubt that the cheap price for which they may be obtained, after having been known for three or four years, contributes greatly to facilitate this extensive distribution.

Among the species that are most admired, *P. atrosanguinea* has ranked most deservedly high, as being one of the most ornamental; and it is from a hybridization that has been effected between that species, and the pretty, but less showy one, *P. pedata*, that the plant, of which the accompanying drawing is a representation, has been obtained. It will be seen by those who are acquainted with the species above mentioned, that the one here figured partakes of the character of both those species, combining the graceful form and foliage of *P. pedata* with some of the rich colour of the flowers of *P. atrosanguinea;* but the latter only is possessed to such a degree as to preserve a marked distinction, and to render it worthy of being elevated to the rank of a species.

This charming little herbaceous plant is perhaps unsurpassed in beauty by any of its allies, and will form a most welcome addition to the numerous delightful species hitherto known. Its fine rusty-brown blossoms, which have also a slight tint of deep orange, exhibit, we believe, a *Potentilla* of a different colour to any other species, and on this character its specific appellation has been founded.

We regret that we have been unsuccessful in endeavouring to ascertain the name and residence of the individual to whose praiseworthy exertions we are indebted for this valuable little species, as we have merely discovered that it was raised about three years since, and presented to Messrs. Rollison, of the Tooting nursery, by a friend, without any further information respecting its origin than that above detailed.

As a border plant, this species may be cultivated with the greatest ease, by applying to it the usual attention bestowed upon other herbaceous plants; and specimens of a moderate size will produce a most brilliant profusion of their beautiful flowers in the months of July and August. It may be easily multiplied by division of the roots, and also, we believe, from seeds.

The specimen from which the annexed drawing was taken, flowered most abundantly in the nursery of Messrs. Rollison, Tooting, in July last.

The generic name was applied by Linnæus, in reference, it is said, to the efficacious medical properties of some of the species.

ON THE CULTURE OF CALLA (RICHARDIA) ÆTHIOPICA.

The old, but very ornamental plant which forms the subject of this notice, has been known in this country for more than a century; and, like all other plants so circumstanced, is now very generally neglected. We have recently, however, become acquainted with an interesting fact relative to its cultivation, which, if more generally known, would probably have the effect of restoring it in some degree to popular favour. This we shall now briefly detail; first offering a few general remarks on its cultivation, as we have been accustomed to practise it.

It is not uncommon to see this fine old species in cottage windows, and the drawing-rooms of the more respectable classes in the vicinity of towns; and to such cultivators we imagine it will not be uninteresting to lay down a few rules for its management. We will suppose a plant in the possession of any such individuals to have recently flowered, and the leaves to be just commencing to decay. This will most probably occur about the month of May, and at this period of its growth, the pot in which it is kept should be removed to the open air, where the plant can receive an abundance of solar light; only a sufficient quantity of water should be applied to the roots to prevent its leaves from dying off suddenly, and when they are completely withered, it may be removed to any situation where it can be preserved from wet,—any spare corner of the house, or even of the cellar, will answer the purpose,—and the soil should be occasionally sprinkled with water, but only to such a degree as to prevent it from becoming dust dry.

If the plant is desired to flower in March, it should be removed from its confinement in the month of November or December, and, after being potted, may be placed in the window of a dwelling room where a fire is kept, and watered more liberally. The soil used should be a rather sandy loam, with a slight admixture of leaf mould, or rotten manure. In the situation above recommended, the plant should be frequently turned to the light, and no curtains or other material should be allowed to obstruct, or screen it from, the solar rays.

As it progresses in growth, it must be more frequently watered, but never unless it requires it, and the water which drains through the pot into the saucer beneath, should be daily thrown away as soon as it is perceived. With such treatment, it may be brought to flower in great perfection; and its fine, deep green, glossy foliage, contrasted with the large and snowy white flowers, and these again with the beautiful yellow spadix in the centre of them, will have a very interesting and ornamental appearance, and remain perfect for several weeks.

By preserving this plant dormant for a longer period, and planting it out in the open border in the month of May, its season of flowering may be deferred till June, or even later, and it will form a showy feature in the flower-garden. Or, it may be left to flower in the situation before alluded to, and a succession of blossoms may thus be obtained. In either of these cases the plant should be frequently examined during its state of torpidity, and as soon as it is observed to commence growing, it should be immediately potted, and removed to where it will be well exposed to light, and, if possible, to air.

With a little attention, it may be treated entirely as a border plant, but such a practice is usually prejudicial, as it is exceedingly difficult to preserve the roots sufficiently dry during the winter in the open ground. Where this system is adopted, the roots should be covered with a box or inverted flower-pot in wet weather, as soon as the leaves decay; and in the winter, besides this protection from wet, they must be covered with some dry litter to preserve them from frost. All circumstances considered, pot culture is decidedly the best mode, as the plants have a much more showy appearance when thus treated, and attain to greater perfection.

This plant may be increased by separating the offsets which are formed on the thick, fleshy roots, in the month of August or September. They should be potted separately, in 48-sized pots, in the soil before recommended, and treated precisely as the old plants.

This is the usual method of cultivating the plant now under consideration, and, where it is properly practised, is always successful. But we have promised to describe a new system of culture, or at least one which has rarely been adopted, and that is, to treat Calla Æthiopica *as an aquatic.* Few persons are, we think, aware of the adaptation of this plant to such a purpose, or we should more frequently see it flourishing in our ornamental ponds and basins.

The great scarcity of ornamental aquatic plants, renders a knowledge of the above fact relative to this species peculiarly interesting; and it has only to be planted out in the bottom of a basin, in which a sufficient quantity of water is kept through the winter to prevent the frost from reaching it, to render it at once a delightful and valuable addition to our aquatic Flora. As a greenhouse aquatic, there would be no danger from frost; and if it were only placed (in the pot) in the bottom of an ornamental basin during the flowering season, it would be an object of great interest and beauty. It may be well to add, that the water alone is sufficient to support its stems, and that, when planted in the bottom of a pond, the flowers and leaves will invariably rise above the surface, if the depth of it is not more than three feet.

The non-practical portion of the readers of this little article will perhaps need to be reminded, that vegetable substances rot much sooner when subjected to alternations of wet and drought, than they will when kept constantly immersed in water; this will reconcile the apparent discrepancies in it that would otherwise be observable, and prove that though the plant here treated of would perish by being kept in the open ground, it will nevertheless subsist in the bottom of a pond, and sustain the constant but uniform degree of moisture which is unavoidable in such a situation with perfect impunity.

ON ROCKERIES AND ALPINE PLANTS.

NUMEROUS as are the embellishments of which a flower-garden is susceptible, there is none which is so generally neglected, and at the same time is so strikingly ornamental and picturesque, as a group of fragments or masses of rock or stone. As the basement of a small and elegant fountain, or the boundary of an ornamental basin; as isolated groups in the flower-garden, or more extensive assemblages in the pleasure-grounds; they have a most powerful and exhilarating influence on the lover of nature, and, if judiciously introduced, are certainly far from being offensive to persons of the most correct and refined taste.

The practice of attempting to imitate nature in the formation of pleasure-grounds, has been most severely animadverted upon by many eminent writers; but, unless this principle is carried to a ridiculous extreme, we imagine that there are few landscape gardeners of the present day who will be found to coincide in that opinion. Indeed, the greater the diversity of objects that can be *appropriately* congregated together in the flower-garden, or dispersed through the pleasure-ground, the more pleasing and captivating will be the general effect.

Artificial rockeries may be regarded as a species of mimicry of nature; although we are not aware that they have frequently fallen beneath the general censure. Some writers, it is true, have advocated their exclusion from the flower-garden, as being out of character with the usual formality of such a department, but all agree in allowing them a place in the pleasure-grounds. They may be constructed of a variety of materials, will answer many useful and ornamental purposes, and, in the hands of a skilful artisan, or even of an amateur with any pretensions to taste, may be rendered objects of great interest and attraction.

Several examples of different kinds of rock-work occur in the vicinity of the metropolis. That of His Grace the Duke of Northumberland, at Sion House, has by some been considered the finest specimen of the kind in Britain. With a due appreciation of the grandeur and boldness of the design, and the tastefulness of its execution; and also admitting that the object for which it was evidently intended—that of forming an easy and almost imperceptible boundary to the flower-garden—is fully effected; we cannot perceive much that is really ornamental in the general effect, and are inclined to conceive that a detached group has a much more favourable appearance, and might certainly be formed with less expense. As an instance of that peculiar kind of rock-work, it is perhaps unrivalled; but it fails of producing any effect beyond that for which it was designed, and is an example that we cannot think worthy of imitation, however suitable it may be to that particular locality.

The kind of rock-work which we would recommend,—that is, where a complete rockery is intended to be formed,—should be situated in a retired and concealed part of the pleasure-grounds, where it can be approached suddenly. This is of great importance, as the effect produced will be considerably diminished if it can be seen from a distance; for, as its most striking features would thus unfold themselves gradually, the interest they create will have in a great measure subsided by the time the whole is brought into view. Besides, as the emotions first excited by landscape scenery are very generally permanent, the very fact of its being visible from a distance is calculated to produce an unfavourable impression; whereas, if it were so contrived as to exhibit the whole or the principal part of its beauty at the first gaze, it would ever afterwards be regarded as an object of peculiar interest.

Water is an indispensable feature in all rock-work, and whether it be employed in the form of cascades, jets-d'eau, fountains, or only pools, contributes greatly to enhance the general effect. In extensive groups, any or all of the above forms may be exhibited with propriety, but the cascade is not available in smaller collections; and even in large ones, unless the ground on which the rockery is constructed presents a steep declivity, it cannot be judiciously introduced, and should give place to a small and circuitous stream. Where practicable, the rockery should always be formed in a low part of the garden, to admit of its being supplied with any required quantity of water from a reservoir placed in a more elevated situation. By a little contrivance, likewise, the water may be turned on or off at pleasure, and the supply may thus be greatly economized, particularly when water is scarce, as the whole of the apparatus may easily be set in motion on the approach of a visitor, and at all other times its exhibition will be needless.

Much of the appearance of a rockery depends upon the disposition of the surface of the ground upon which it is formed. A piece of ground of an oval, oblong, or any irregular figure, will answer the purpose perfectly well; but it should be so disposed as to be hollow in the centre, with irregular sloping banks all round, deeply undulated on the surface, and with two or three openings for views of any other interesting objects that may be contiguous, or for entrances. Into the centre of such a spot, a pond of water might be most appropriately introduced, round the margin of which, portions of rock might be made to project over the water, and some smaller pieces might likewise be placed in the middle of the pond, to form the base of a fountain. Nearly opposite to the point from which the whole is viewed, a small stream of water may be made to rush down by an irregular and winding route between rugged and massive pieces of rock; and if a few dolphins or other interesting figures are placed at intervals throughout the whole group, near the margin of the pond, and contrived so as to spout water in different directions, or even if water is propelled from small apertures in pipes made for the purpose, and the whole of these are brought into action at the same time, their combined effect will be truly enchanting, particularly when the sun is shining on it. A pipe may be introduced into the pond for carrying off all the superfluous water, or a self-acting pump may be erected to force it back again into the reservoir, in which latter case a great saving of water will be effected.

The groundwork or foundation of a rockery may be formed of different materials, according to its extent, and the size of the fragments of rock. If it is to be introduced into the flower-garden, and is intended to be of a purely ornamental character, it should either be of a pyramidal or conical form; we use these terms as expressive of the general outline, by no means intending to convey the idea of a smooth and even surface. In such a case, the foundation should be made of any old and unornamental pieces of rock, stone, old bricks, or similar rubbish, roughly cemented together with common mortar; and if the ornamental pieces of rock or spar are small and scarce, the form and contour of the whole should be determined upon, and accurately delineated, previously to fixing them upon it; so that, by merely attaching them to the surface, and carefully concealing the point of union, and the material by which it is effected,—which should be any common cement,—the erection will have the appearance of a solid mass of rock, and, to the uninitiated, will be valued and admired accordingly. Where, however, the fragments of rock are large, abundant, and diversified in form, and the object is to form a complete group, a foundation of clayey soil, firmly beaten, will be sufficiently solid, and on this the pieces of rock may be laid or piled, according to the taste of the proprietor. But if they are piled to any considerable height, they must likewise be cemented together, to preserve them from being blown down by the wind.

It is impossible to prescribe rules for the arrangement of the different pieces of rock or stone, as this will depend entirely on their size and form, or the taste or caprice of the workman or his employer. We can only suggest, that the outline, and also the more minute details of it, should be as diversified as possible, and that no two portions of it should bear the slightest resemblance to each other. The design might even be taken from a piece of natural scenery in the neighbourhood, or one with which the constructor is familiar, and if the original is at all connected with any pleasing associations,—and perhaps situated at such a distance as to render a frequent visit to it impossible,—the imitation, if faithfully executed, will be doubly interesting.

But the situation for a rockery being chosen, and the ground prepared for its construction, the materials of which it is to be composed must be sought and obtained before they can be arranged. These will be varied according to the locality of the garden, and the means of the owner. If the estate be situated near the sea shore, a rich variety of fragments of rock, stones, and shells, may soon be collected, of a sufficient size for a small erection; but it is only from the mountainous districts, and from mines and other excavations, that an adequate quantity of larger masses can be procured. Where large flint stones abound,—as in many parts of Surrey,—they may be made to form a very neat and ornamental group, particularly if they are only required to skirt a basin or pool of water. In the northern parts of England, where huge masses of rock are plentiful and easily procured, the artificial rockery may partake more of a natural character, and be of more extended dimensions. And where expense is not an object, collections may be made of all the most beautiful descriptions of rock from all parts of Britain, or even of Europe, blending with them large and curious shells, and observing to place the latter in conspicuous situations.

Connected with the rockery, a grotto or cave may be easily constructed, which will be quite in character with the whole erection. This species of garden ornament has latterly fallen into disuse, but it certainly deserves to be revived. It should be so contrived as to be quite dark, and the roof and sides should be formed of some lucid and transparent kind of rock or spar, so that, when illuminated, it will have a most brilliant appearance.

We proceed, however, to speak of the purposes of utility which a rockery will supply, confining ourselves chiefly, and indeed solely, to the capabilities it affords of growing Alpine plants. By the term Alpine plants, we may be understood to imply not only such as are really found on the Alpine chain, but all those which grow naturally on any description of rock or stone; in short, it is perfectly synonymous with rock or mountain plants. These most interesting little objects,—for they are all of them of dwarf habits,—like the materials most congenial to their growth, are by no means regarded as they deserve to be by plant cultivators; the reason of which probably is, that few persons seem disposed to make a sufficient inquiry into their habits, to enable them to grow them to perfection, or even to preserve some species alive.

It appears to be a general, though without question a most mistaken, notion, that because Alpine plants are found growing on the summits of mountains, in very elevated and exposed situations, they are capable of enduring an intense degree of cold. Acting upon this supposition, cultivators never think of affording them any shelter during the winter months, and the consequence is, that very many of them perish in severe weather. Now, upon a careful examination into the circumstances in which they are naturally placed, it will be found that so far from their ever being exposed to the action of intense cold, they are always enveloped, as it were, in a thick mantle of snow, through the winter months, which is absolutely impervious to severe frost.

In the present age of scientific discovery, and the almost universal diffusion of scientific information, it seems almost needless to state that snow forms a protecting screen to vegetable substances, equally, if not more secure, than any materials which the art of man can apply to the surface of the ground. We believe we are correct in saying, that the temperature of snow, at least where there is any bulk or depth of it, is constantly maintained at a very trifling degree below freezing point, and that only the mere surface of it is at all affected either by cold or heat. From this it will be evident, that in the mountainous regions which are inhabited by Alpine plants, and which are almost perpetually covered with snow, no degree of cold, beyond that of the substance just mentioned, can ever reach them.

Another important particular connected with their natural circumstances, and which ought to be borne in mind in their cultivation, is, that by being thus buried in snow, the soil in which they grow is kept in a uniform state of moisture, never amounting to wet or saturation; and even when the snow thaws, this takes place so gradually, the water which it engenders is also so speedily precipitated to a lower region, and the thaw is so rapidly succeeded, indeed caused, by the powerful heat of the sun, that, throughout the entire season, they are not subjected to a greater degree of moisture than is sufficient to preserve them alive, or excite and maintain them in a growing state. How different is the case with those of them which are cultivated in our gardens! Exposed, through the whole year, to the frequent recurrence of such a degree of cold and wet, as, to those acquainted with their habits, would appear more than sufficient to destroy them, it cannot be surprising that they do not succeed. Let them but be sheltered, during the winter season, with some light and dry material which is calculated to exclude both wet and frost, (that is, any extreme degree of either of them,) and these charming little plants may then be seen flourishing to a degree of perfection even superior to what they naturally attain, and will become some of the prettiest ornaments of our flower-gardens, but more especially of our rockeries.

We have already devoted too much space to this interesting subject to allow of our furnishing a list of the best and most ornamental kinds of Alpine plants; but we may observe, that, though it is by no means an extensive class of plants, it is neither deficient in variety or beauty, and an ample stock of most interesting species may be obtained of almost any nurseryman for a trifling cost. The soil for them may be introduced into any of the crevices of the rockery, and the best situation is one in which two or more pieces of rock meet, so that by the fissure thus formed, an outlet will be provided at the base for the escape of all superfluous water. Planted in such a situation, and sheltered in the winter according to the preceding directions, no other attention will be necessary, except that, in excessively hot weather, they may occasionally require a slight watering.

To those of our readers who possess neither a rockery nor a collection of Alpine plants, we recommend an immediate attention to the subject, and however small and feeble the attempt they may make to supply this deficiency in their gardens, they may rest assured of an immediate recompense in the great delight and gratification which the accession of so interesting and ornamental a feature will afford.

CACTACEOUS PLANTS MULTIPLIED BY SEED.

A LARGE and important, because extremely interesting, portion of the tribe *Cactæ* has long been confined to the collections of the wealthier classes of horticulturists, on account of the tardiness with which they propagate themselves. All those with spherical heads, or large and thick stems, require to be much mutilated, and their appearance rendered any thing but ornamental, before the slightest hope of obtaining a progeny from them can be entertained. And even in such a case, success is sometimes doubtful, always protracted, and occasionally the operation of decapitating the plant proves fatal to it.

To supply the deficiency in this country of a sufficient number of specimens to furnish the collections of the numerous lovers of the tribe, an immense quantity of plants has at various times been introduced from their native districts; but these, owing to the want of consideration on the part of the collectors, in detaching them from their natural situations without any regard to their principal and most vitally important roots, have very generally perished a few months after their introduction, and their owners have never, till very recently, extracted and sown the seeds with which they are usually furnished.

During the last and present years several cultivators, however, have adopted the latter expedient, and we observe with pleasure that they have been eminently successful; so much so indeed, that we anticipate, in the course of a few years, many of these rare and curious plants will become as common in our collections as the beautiful *Cactus speciosus* and others of the same kind now are.

To promote this most desirable object, we will now state, that seeds which can be matured in the stoves of this country, as well as those obtained from imported plants, will vegetate freely, if sown in pans, in a light sandy soil, and these latter plunged in a gentle bottom heat. As soon as the plants appear above the surface, they should be immediately potted into small sixty-sized pots, in a *very sandy soil*, and watered very slightly with lukewarm water. They may be kept in a gentle heat, (bottom heat is the most suitable, provided it is not accompanied with too much moisture,) and retained in this situation till they have attained a sufficient size to require potting into larger pots, when they may be removed to the succulent house, and treated as the old plants.

Several years will elapse before they are large enough to develop their true characters, but at the expiration of this time the plants, if properly treated, will be in a most healthy and vigorous state, and by continuing to treat them judiciously, no danger of losing them need be apprehended. We have noticed this method as one which deserves to be generally known, and, where practicable, immediately and extensively adopted.

NEW AND RARE PLANTS,

FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR OCTOBER.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ).

THE CROWFOOT TRIBE (*Ranunculaceæ*).

Delphinum intermedium; *var.* **sapphirinum.** Sapphire blue variable Larkspur. A most beautiful variety, of rather dwarf habits, and producing its flowers in dense profusion. The sepals of the flowers are of a brilliant blue colour, with a slight stain of violet down the centre, and also on the back. Dr. Lindley records his belief in a somewhat extraordinary circumstance related respecting Delphiniums, viz. that a great number of different species may be raised from the seed of one and the same plant; a fact which, if well authenticated, proves the great advantage of raising these plants from seeds. It is recommended to sow the seeds in pans of earth, in preference to the open ground, as they are some time before they germinate, and are liable to rot if they are not preserved from any superfluity of moisture. *Bot. Reg.* 52.

Helleborus lividus. Corsican Hellebore. One of the least showy of hardy herbaceous plants, but producing a number of large greenish-yellow blossoms, and having large, ternate, and deeply dentated leaves. It is a native of Corsica, and has been erroneously considered a North American plant, which has occasioned the application of another name—*H. argutifolius*—but the plant so named and the present species are perfectly identical. It is said to be of rare occurrence, and was obtained from the Hon. W. F. Strangways. *Bot. Reg.* 54.

THE GALIUM TRIBE (*Galiaceæ*).

Crucianella stylosa. Long-styled Crucianella. This very ornamental little herbaceous plant was first discovered by the Russians upon rocks in the mountainous districts of the province of Ghilan, in Persia. Dr. Lindley considers it is not a species of *Crucianella*, but retains the name on the authority of M. Decandolle. It is a very suitable plant for planting in beds in the flower garden, in company with the species of *Verbena*, and when thus treated, its numerous clusters of bright pink blossoms are exceedingly attractive. Its usual period of flowering is the months of June, July, and August, and it grows to the height of a foot or eighteen inches in a moderately rich soil. *Bot. Reg.* 55.

THE BIND-WEED TRIBE (*Convolvulaceæ*).

Ipomæa Platensis. The Plata Ipomæa. This is a very showy species, with long slender stems, large palmate leaves, and delicate rose or lilac-coloured flowers. It is a native of the banks of the Plata, from which circumstance it derives its name, and was first known in our collections through the Hon. and Rev. William Herbert, of Spofforth, but seeds of it have recently been received from the same country which were collected by Mr. Tweedie, and it flowered in the Glasgow Botanic Garden in August, 1837. It is a stove species, of climbing habits, and flowers most abundantly. *Bot. Mag.* 3685.

THE NIGHTSHADE TRIBE (*Solanaceæ*).

Solanum fragrans. This is not a handsome species, but a very singular one, of an arborescent character, and growing from twelve to fourteen feet high in its cultivated state. It grows erect, and produces many lateral horizontal branches at the top, from the forkings of which the flowers have their origin. The latter appear in pendulous racemes, the pedicels of which are all two-flowered, and the corolla is purple when in the bud state, afterwards greenish, and when fully expanded each segment has a dark purple streak on the back: the segments are much reflexed, and the whole flower is very agreeably fragrant. The leaves are broadly ovate, smooth, and entire. It was sent to the Glasgow Botanic Garden from South Brazil, by Mr. Tweedie, and, while kept in a pot, did not flower; but when removed into a border in the stove, it produced its curious blossoms in the month of June. *Bot. Mag.* 3684.

THE TRUMPET-FLOWER TRIBE (*Bignoniaceæ*).

Spathodea pentandra. Five-stamened Spathodea. A most splendid plant, and of a rather extraordinary character. It has been raised in the Glasgow Botanic Garden from seeds received from India under the name of *Bignonia pentandra*, but Sir W. J. Hooker considers it to belong to *Spathodea*. Its large clusters of beautiful pink-coloured flowers, with their rich purple calyxes, impart to it much of the appearance and magnificence of a *Rhododendron*, but to the latter splendid genus it is even superior in character. The plant which furnished the subject of the drawing in the Botanical Magazine, did not flower till it was twenty feet high, and its noble foliage, contrasted with the extremely beautiful flowers, must have presented a very striking appearance. *Bot. Mag.* 3681.

CLASS II.—PLANTS WITH ONE COTYLEDON (MONOCOTYLEDONEÆ).

THE ORCHIS TRIBE (*Orchidaceæ*).

Epidendrum Schomburgkii. Mr. Schomburgk's Epidendrum. Perhaps this may safely be said to be the handsomest species of this extensive genus, or at least of the division of it with elongated stems. The brilliant, inimitable red colour of its flowers is aptly compared by Dr. Lindley to that of *Lychnis Bungeana*, and other plants of that kind. Their extreme gracefulness, likewise, and the interesting appearance of the fimbriated margin of the labellum, contribute much to enhance their beauty. Mr. Schomburgk first discovered this charming species in the interior of British Guyana, and a drawing, with some dried flowers, and plants, has been sent to this country by that gentleman. It has since flowered several times with Messrs. Loddiges, and the only difference between the cultivated plant and the drawing is, that in the latter there are a number of red dots all round the margin of the leaves, while in the former this character has not yet appeared, though Dr. Lindley thinks it probable that it may do so hereafter. *Bot. Reg.* 53.

BOLBOPHYLLUM BRACTEOLATUM. Bracteolate Bolbophyllum. A minute and exceedingly curious little orchidaceous plant, with small furrowed pseudo-bulbs, from the base of which appears a long pendulous raceme, bearing a number of singular, almost inconspicuous flowers. These latter, when magnified, are extremely beautiful, containing a striking combination of a variety of showy colours. It is a native of Demarara, from whence it was imported by Messrs. Loddiges, and flowered in their superb collection in July, 1837. With one or two of its allies, it is said to "offer a singular instance of the existence in America of a genus hitherto only discovered in the old world." It thrives well when attached to a piece of wood, and kept in a warm part of the stove. *Bot. Reg.* 57.

NOTICES OF NEW AND RARE PLANTS

IN FLOWER IN THE PRINCIPAL NURSERIES IN THE VICINITY OF LONDON.

MESSRS. HENDERSON'S, Pine Apple Place. *Antirrhinum trionithophorum.* A rare and very interesting species, with pale purple-coloured flowers, which are very prettily streaked and veined with yellow. It thrives well in the open ground through the summer, but is, properly speaking, a greenhouse plant, and in such a situation it forms a very pleasing ornament. An abundance of flowers are now developing themselves in the greenhouse of these gentlemen, and it blossoms at intervals throughout the whole season. *Malva Towardii.* This pretty species, which produces flowers of a delicate rose colour, is also flowering freely in one of the greenhouses of this nursery, though, like the one above alluded to, it will grow and flower beautifully in the open air in the summer. *Nuttallia grandiflora*, a figure of which is given in a previous part of this number, is now finely in flower in the same situation as those before mentioned, and, if carefully taken from the ground before the occurrence of frost, will make an excellent show in the greenhouse at this season. It should be in every collection, and the low price at which it may be purchased renders it available for all classes. The *Heaths* of these gentlemen are now particularly attractive, as a great number of them are flowering profusely.

Mr. Knight's, Chelsea. *Hymenæa Courbaril.* An old but rare and most singular stove plant. It is of climbing habits, or at least may with great propriety be trained to a wall, has large, doubly pinnate, handsome foliage, and the flowers are produced numerously in dense clusters. These latter are of themselves inconspicuous and insignificant, but a great number of slender filaments of a delicate rose colour proceed from them, and these, when fully developed, have a most interesting appearance. It certainly deserves more extensive cultivation than it at present enjoys, as it is quite an ornament to the stove. *Aphelandra cristata.* This most splendid old stove plant is now flowering in great perfection at the nursery above mentioned, and as it is by no means cultivated to the extent it merits, we take this opportunity of recommending it to every grower of stove exotics. The flowers are produced in large terminal clusters, and, for brilliancy of colour, they are almost unequalled by any others of their class. They are of a bright scarlet hue, and resemble in form those of the species of *Justicia*, to which latter genus the present plant is allied. *Galphimia glauca.* A rare and very showy stove plant, with deep yellow-coloured blossoms, which are produced abundantly from the extremities of the shoots. It is an ornamental plant, of dwarf habits, and, together with *G. splendens*, should form a part of every good collection.

Messrs. Loddiges, Hackney. We never remember to have witnessed such a number of *new* and beautiful orchidaceous plants in flower, even in the splendid collection of these gentlemen, as there is at the present period. We must therefore content ourselves with a very brief notice of the most remarkable of them, and commence with *Lælia autumnalis.* This is one of the most lovely of all orchidaceous plants, vying with *Dendrobium moniliforme* in the exquisite delicacy of the tints of its flowers. To the flowers of the plant just mentioned, those of the present species likewise bear some resemblance. They are produced in erect spikes from the summit of the pseudo bulb, (which latter is of a roundish-oblong form,) varying in number according to the size of the plant; the predominant colour is a beautiful purplish lilac, which merges towards the centre into a light flesh colour. They are about an inch and a half across, and, when fully expanded, have a most enchanting appearance. *Miltonia candida.* This is scarcely less beautiful than the preceding, though the flowers are of a less attractive colour. The flower spike is erect, and proceeds from the base of the pseudo bulb; the flowers are large, of a dull yellow ground, copiously mottled with brown, and the labellum is pure white, whence the species derives its name. Several fine specimens are now producing three or more spikes of flowers with the gentlemen before named. *Dendrobium amplum.* A most remarkable species, differing very materially from those previously known. The stems which proceed from the base of the plant are eventually formed into perfect pseudo bulbs, very much after the manner of some of the species of *Eria*, and the flowers, which in the specimen now noticed are solitary, are of a most curious construction; they are greenish-yellow, and very prettily spotted with brown. We should certainly be disposed to question its relation to *Dendrobium*, but Messrs. Loddiges have the authority of Dr. Wallich for the above name, and their specimen corresponds to the figure published in his splendid work on the Asiatic Flora. *Cœlogyne fuliginosa.* This is a new and very interesting species, with flowers of a light brown colour; the labellum, which is beautifully fringed, being of a very dark brownish purple hue. The flowers are about an inch across, and appear to be produced rather sparingly, though, from the smallness of the plant in the collection of these gentlemen, this latter feature is probably not a permanent one. The whole of the above beautiful species, as well as *Oncidium Henchmannii*, *Burlingtonia candida*, and several other very rare orchidaceous plants, are now flowering in fine perfection at this nursery.

Mr. Low's, Clapton. *Salvia patens.* This splendid and valuable species still continues flowering at the above nursery, though it has recently been removed to the greenhouse. Such is its propensity to flower, that it is very rarely that cuttings can be procured free from flower buds, so that some difficulty is experienced in propagating it. To those whose object is the production of flowers, with little regard to obtaining a stock of it, this plant will be a most invaluable ornament both to the greenhouse and the flower-garden. Another new species of *Salvia*, with much smaller flowers, and of a less intense blue colour, is also in flower at this nursery, and is both interesting and ornamental. A pretty little new plant, evidently belonging to the natural order *Labiatæ*, and supposed to be a species of *Gardoquia*, which has been raised from Mexican seeds, is flowering very profusely in the greenhouse of this gentleman. Also a species of *Pentstemon* from the same quarter, the flowers of which resemble *P. gentianoides* in colour, but they are much smaller, and the leaves are of a lighter green colour, and much serrated.

Messrs. Rollison's, Tooting. *Oncidium Lanceanum.* The splendid specimen of this most magnificent plant, which we have before noticed as being in the possession of these gentlemen, is now most profusely in flower; but, owing to the lateness of the season, the flowers are not of that deep rich hue which usually characterizes them. It is, however, a most interesting object, and all lovers of orchidaceæ would derive a considerable degree of gratification from witnessing it in its present state. *Oncidium raniferum.* This pretty little species is flowering most abundantly in the rich collection of these gentlemen, and is remarkable, not so much for its beauty, as for the great profusion in which its flowers are produced. A supposed new species of *Saccolabium* is also now in flower at this nursery. The flowers are of the usual colour of those of the other species, but the labellum is of a deep purplish red hue. It is a most lovely object when in flower, and thrives well on a block of wood, suspended from the roof of the house. *Tweedia cœrulea.* A most interesting greenhouse or half-hardy plant, said to be of twining habits. The specimen which is now flowering in the greenhouse of these gentlemen grows nearly erect, and the beautiful blue blossoms are produced abundantly from the extremities of the shoots. It is an exceedingly ornamental plant, and should be in every collection.

Mr. Young's, Epsom. *Impatiens scapiflora.* This very lovely little stove species is flowering profusely at the above nursery, and its exquisitely delicate pink blossoms recommend it to the notice of all admirers of simple but real beauty in flowers. *Lobelia heterophylla.* A most interesting and beautiful species, with brilliant blue-coloured flowers. It is now flowering very freely in the greenhouse of this gentleman, but is a most valuable summer ornament to the flower-garden. It appears to be well adapted for growing in beds or groups in the department just mentioned. *Lobelia Drummondii.* A new species of a very different character to the preceding. It grows to the height of eighteen inches or two feet, and bears flowers of a rich scarlet hue, but considerably lighter than the species of that colour which were previously known. It will prove valuable, either as a greenhouse or border plant, on account of the brilliant colour of its flowers, and the liberal manner in which they are produced. A new species of *Rhexia* with white flowers is blossoming very freely in the stove of this nursery, but it is most probably a greenhouse species, and is certainly an interesting one.

OPERATIONS FOR NOVEMBER.

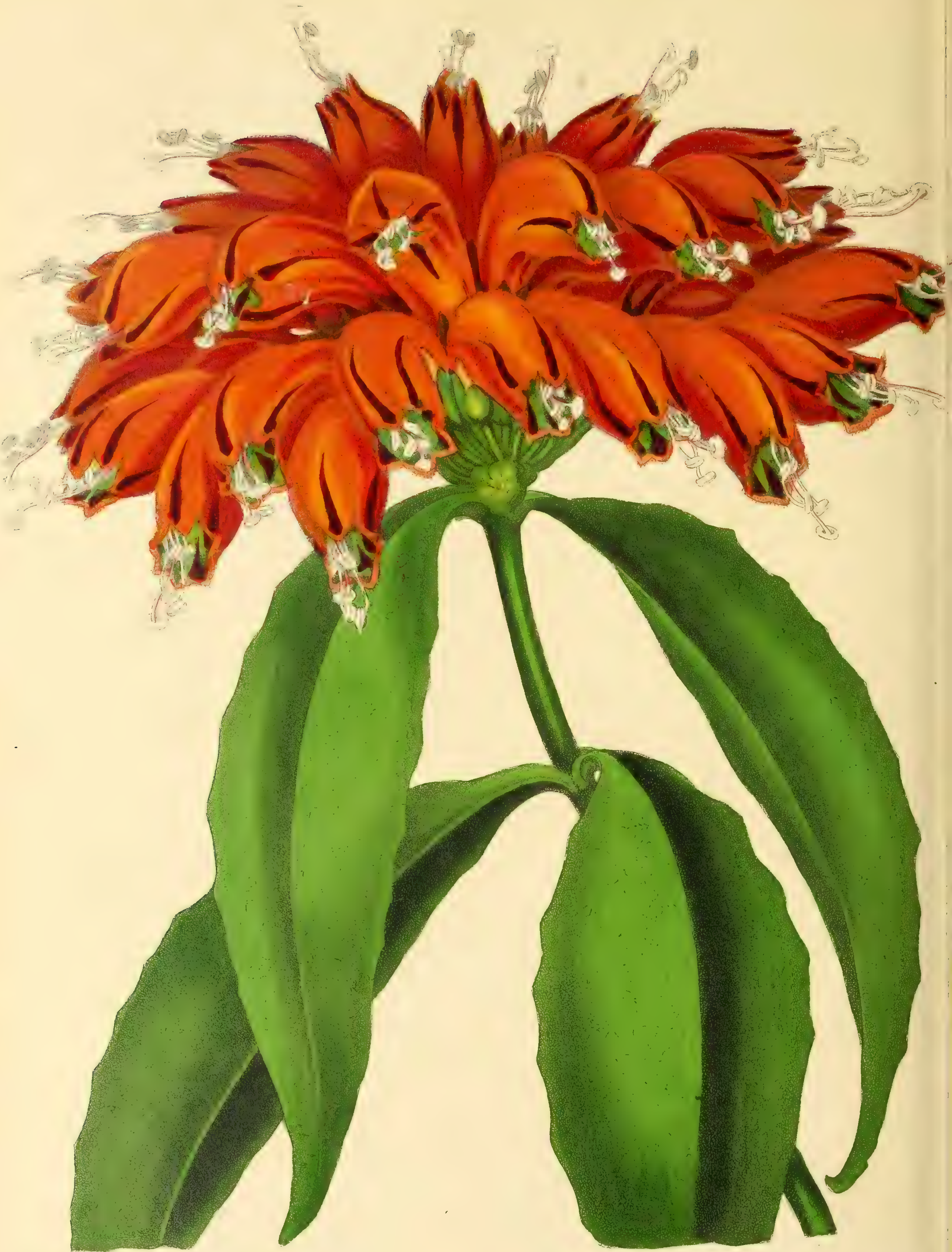
This should be a busy month with the gardener, as all ground that is unemployed should now be dug roughly over, to remain exposed to the atmosphere through the winter. An excellent practice with ground that has been long cultivated, is to clear off all weeds, dig it very roughly, and after it has been thoroughly exposed to the air for two months, turn it over again in a contrary direction. This is a system frequently employed by good agriculturists, only substituting the plough for the spade, and it would be well if the gardener would occasionally take a survey of a well-cultivated farm, as there are many operations performed by farmers—frequently, it must be allowed, from no other reason than because they have experienced the good results of them, and without any correct knowledge of the causes from which those results proceed—from which an intelligent and observing individual may gather much valuable and useful information, and such as will greatly assist him in the more refined processes of horticulture.

Many persons, and even those who are not without some just pretensions to ability, are disposed to treat very slightingly the practice of digging up ground in the autumn for the purpose of subjecting it to the various atmospheric influences which characterize the winter season. But those best acquainted with the *science* of gardening—and this has been most powerfully corroborated by *experience*—well know that such a process is calculated to produce the most beneficial results, and is far preferable to an application of manure on ground where only flowers are cultivated, as it ameliorates and renovates the soil, and decomposes all noxious extraneous substances, without imparting to it any of those rank qualities which manure invariably produces, and which are nearly always inimical to the blossoming of plants.

Stove and orchidaceous plants are, or should be, now enjoying a season of rest, and their treatment, as regards heat and moisture, should be regulated accordingly. Any dampness, that is, farther than is necessary to maintain life, or fire heat more than is required to exclude frost, should be alike regarded as seriously prejudicial, and, therefore, cautiously avoided. We will merely qualify these directions by saying, that small specimens of orchidaceous plants may, with some degree of propriety, be subjected to the excitement of a constant stimulus, as most cultivators are anxious to possess large plants, and, while in a young state, they are not required, neither can they be expected, to produce many flowers. But, as soon as they have attained to a flowering state, such a practice should be immediately abandoned; and, during the period through which it may be considered necessary to adopt it, the plants so treated should always be kept in a small house or pit by themselves. Forcing may be continued upon the principles recommended in our last month's number, observing to syringe the forced plants frequently, for the suppression of insects, and to fumigate them also with tobacco, if necessary.

In the damp, foggy weather, for which this month is almost proverbial, air should be admitted very cautiously into the greenhouse, even though the atmospheric temperature may be sufficiently high to warrant it, as it is one of the most important principles of plant culture to keep the houses dry at this season. In dry and favourable weather, however, every opportunity should be embraced for admitting it as freely as possible, as, in this case, it will have the effect so much desired,—that of drying up all superfluous moisture, and expelling the watery vapour which is constantly transpiring from the plants. If this point is properly attended to, and the plants are watered with caution, at the same time observing not to spill the water about the paths or other parts of the house, fire heat will never be required in the greenhouse, unless when the frost is very severe. Cape bulbs should be potted in the early part of the month, and they may be kept in a pit or frame through the winter, with a covering of mats or hay in frosty weather. Water them very sparingly, or they will be liable to rot.

The beds and borders of the flower-garden should be freed from all rubbish, and the operation of digging them may be commenced towards the end of the month. Of course all deciduous shrubs should be pruned previously, though we are inclined to believe that roses should not be pruned till the spring, as we saw many which were greatly injured by the frost of the last severe winter, on account of their having been cut too early. All kinds of trees and shrubs may be layered, if an increase is desired; it is better either to make an incision or a *tongue* (as it is technically termed) in the shoots to be layered, as this will facilitate the formation of roots. All bulbs should be planted this month, herbaceous plants should be divided, and it is highly advisable that the latter should not be planted in the situation they previously occupied, which will preserve the flowers from degenerating. Protect all tender trees and shrubs with mats or other covering towards the end of the month, as frosts will most probably then be becoming prevalent. Attend to the potting of annual plants as they may require it, and be especially careful to preserve them from damp. There are some kinds of herbaceous plants which are not completely hardy, and to these a slight covering of dry litter will be of great advantage; this should also be effected ere the month closes.



Æschynanthus grandiflorus

ÆSCHYNANTHUS GRANDIFLORUS.

(GREAT-FLOWERED ÆSCHYNANTHUS.)

CLASS. DIDYNAMIA. ORDER. ANGIOSPERMIA.

NATURAL ORDER. CYRTANDRACEÆ.

Generic Character.—*Calyx* ventricosely tubular, five-cleft. *Corolla* tubular, incurved, with a dilated, campanulate throat, and an oblique, sub-bilabiate limb. Stamens four, didynamous, exserted, usually with the rudiment of a fifth; anthers at first conniving by pairs; cells parallel. *Stigma* excavated, somewhat funnel-shaped. *Capsule* long, silique-formed, two-valved, falsely four-celled. *Seeds* small, generally scabrous from papillæ ending in a bristle-like tail at both ends.—*Don's Gard. and Botany.*

Specific Character.—*Stem* rooting. *Leaves* long, lanceolate, nerveless. *Umbels* terminal, many-flowered; segments of calyx ovate; lobes of corolla rounded, nearly equal. *Style* exserted.

Rarely have we had the gratification of figuring so splendid a plant as the one represented in the annexed drawing. The brilliant colours of its flowers, their great profusion, and the fact of their being produced in such large clusters, render it one of the most deeply interesting and strikingly ornamental objects with which we possess an acquaintance. Our readers will be enabled to form a tolerably correct conception of its beauty from the present figure, which, we may observe, is far from being too highly coloured, or too glowingly represented, but, on the contrary, falls short of conveying an adequate idea of its distinguished splendour.

This plant is not more remarkable for the beauty of its flowers, than it is for its singular character and habits. It has by some been considered a parasite, but that this is an erroneous impression, and that this species is a true epiphyte, is sufficiently proved by the fact of its thriving equally as well on dead as on living branches; thus demonstrating that it derives its support solely from atmospheric sources. In this respect it is a perfect novelty, as we are not acquainted with another *shrub* which resembles it in habit.

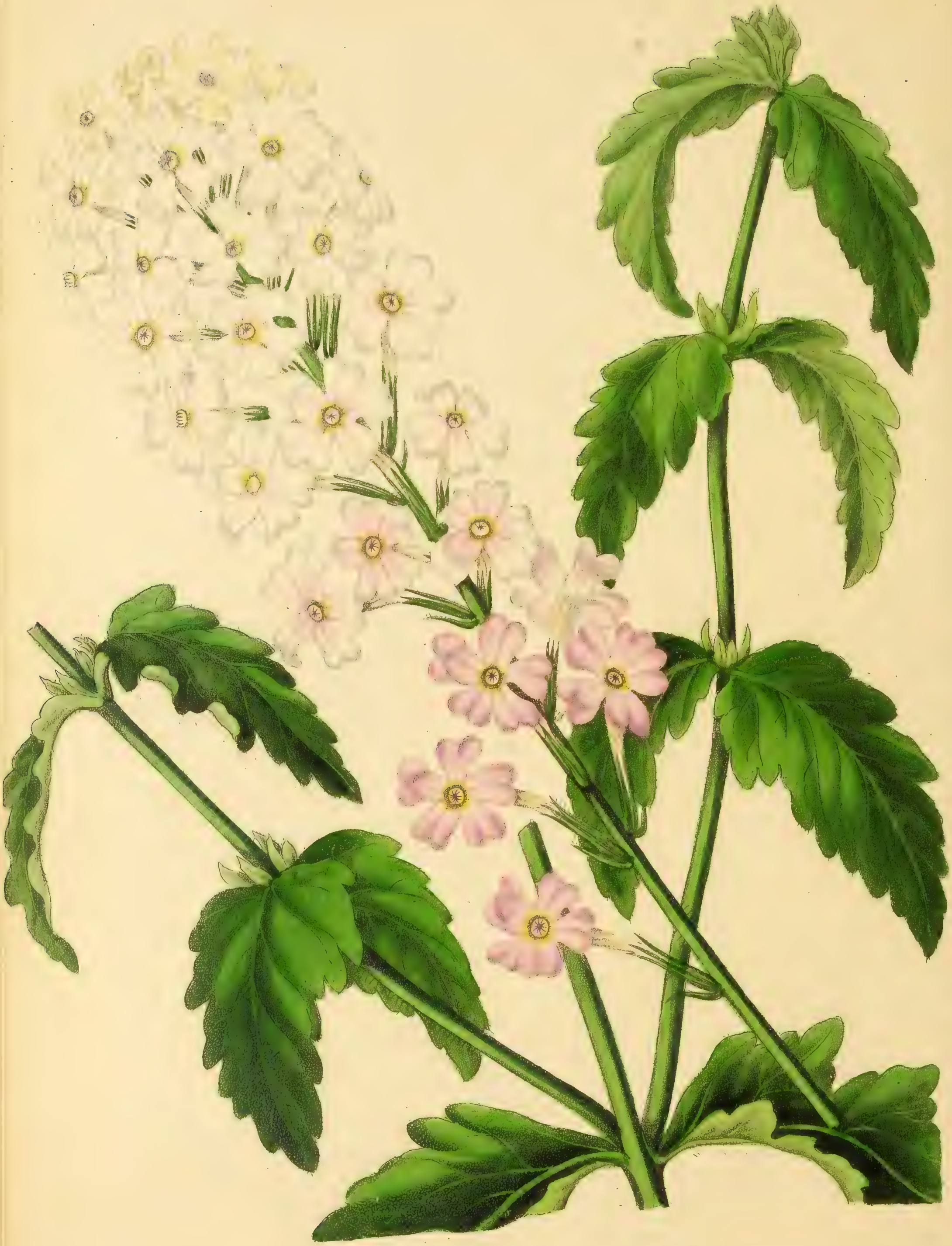
Like the majority of Epiphytes, it thrives best in reduced moss, with a little heath-soil and potsherds; but the pots require to be very effectively drained. It also flourishes most luxuriously on large pieces of wood, cut for the purpose to about four or six feet in length, and from six to ten inches in diameter. All over the surface of this block a layer of moss should be fastened with copper wire, and it may subsequently be either fixed in a large pot, or attached to any other piece of wood, or part of the house which is strong enough to support it. The plant may then be placed in the pot, in a compost of the above-mentioned materials, or attached to the base of the block of wood. In either case, the shoots should be fastened to the stump before alluded to, to which they will in a very short time adhere, as they emit roots from almost every joint.

During the growing season, the plant should be watered freely, and syringed frequently; and when its growth is completed, it is advisable to remove it to a cooler house, and keep it comparatively dry, in order to induce it to flower more abundantly in the succeeding year. The orchidaceous house is admirably suited for it when in a growing state; and the atmospheric humidity which is usually maintained in such a situation will be highly favourable to the superior development of its various parts. The temperature of a greenhouse is abundantly sufficient for it during the period through which it is desirable to preserve it in a state of torpidity.

It may be multiplied with remarkable facility by cuttings, which should be planted in reduced moss, covered with a bell-glass, and placed in a brisk bottom heat. One joint will be sufficient for the purpose, and will form a strong plant in a very short time, provided it is judiciously treated.

The collection at Chatsworth was enriched with this superb plant on the return of Mr. John Gibson from India, whither he had been sent as collector to His Grace the Duke of Devonshire. It was found growing in the greatest abundance at the base of the Khoseea Hills, in valleys remarkable for their humidity and shade; which sufficiently demonstrates the importance of applying these two principles in artificial cultivation. The elevation of these tracts was not greater than one thousand feet above the level of the sea, and the plant blossoms during the cold season. In its native localities, it covers whole trees with its rich crimson blossoms; its branches depending in the most graceful manner, and forming elegant festoons from branch to branch, and from tree to tree, crowned at their extremities with a most brilliant profusion of flowers.

It blossoms in this country in the autumnal months,—usually August or September; and grows to the height of four, five, or more feet, according to the adaptation of the treatment bestowed upon it.



Verbena teucrioides

VERBENA TEUCRIOIDES.

(TEUCRIUM-LIKE VERBENA.)

CLASS.
DIDYNAMIA.

ORDER.
ANGIOSPERMIA.

NATURAL ORDER.
VERBENACEÆ.

GENERIC CHARACTER.—See vol. i. p. 173.

SPECIFIC CHARACTER.—*Plant* perennial. *Stems* round, erect, much branched, hairy. *Leaves* opposite, sessile, ovate, with irregular, deep, obtuse serratures, rugose, acute, hairy. *Flowers* produced in a terminal spike of from six to nine inches in length, large, pinkish white. *Calyx* of five, linear, acute segments, hairy, with a small linear bract at its base. *Corolla* nearly an inch longer than the calyx; limb five-parted, lobes nearly equal, obtuse, slightly bifid.

SEEDS of this new and extremely interesting plant were received through the Earl of Arran, from Mr. Tweedie of Buenos Ayres. From this importation only five plants were produced, which flowered in the Glasnevin garden in the month of July of the same year. It is described by Mr. Tweedie, and evidently with correctness, as a perfectly distinct species, and was collected by him in a district called Tandil, in the interior of the country.

The great length of the flower-spike,—which is usually more than six inches,—and the large size of the flowers, constitute it quite a new, and a rather remarkable feature of the beautiful genus *Verbena*, and are alone sufficient to entitle it to extensive notice; but the exquisitely delicate hue of the flowers, and, above all, their delightful odour, which is described as being peculiarly agreeable, especially towards the after part of the day and during the night, invest it with more than ordinary interest, and will, we are convinced, obtain for it a rapid circulation through the collections of this country.

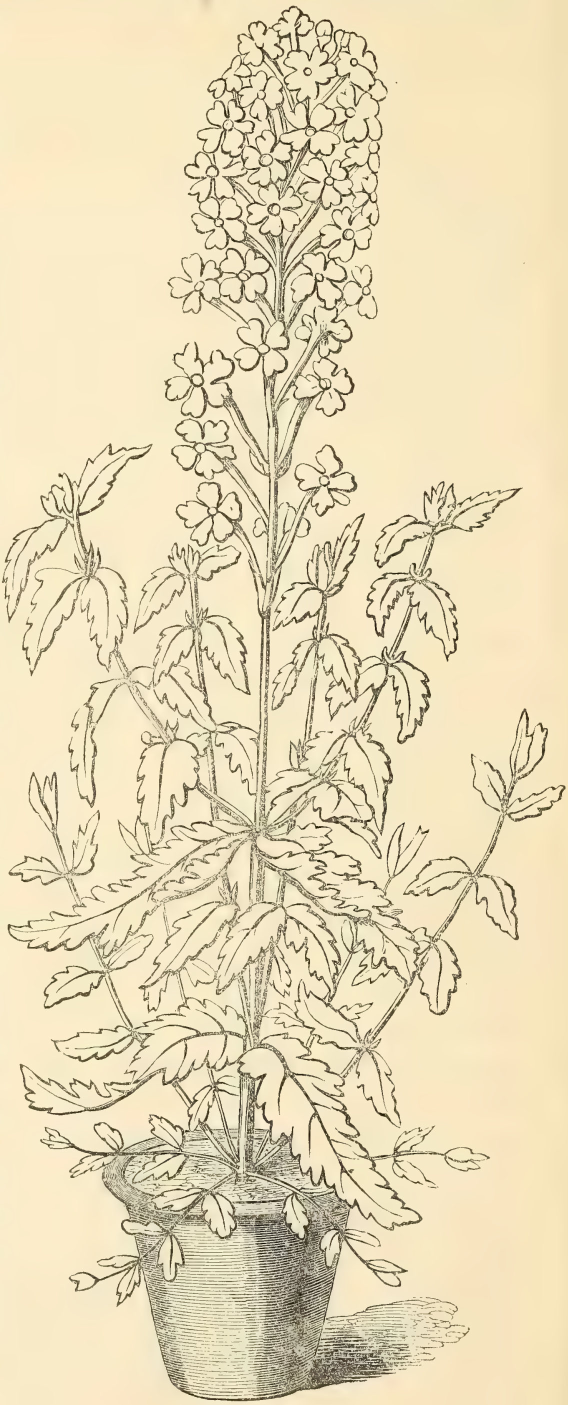
It will be seen, from the coloured drawing, that this species is an unusually strong-growing one, while its erect habits and striking disposition to branch are exhibited in the subjoined wood-engraving. The flowers, which are when first developed a delicate pinkish white, merge towards their decay into a rich rosy-pink hue, and the contrast presented by these two states is exceedingly pretty and interesting. On the whole, we consider it the finest *Verbena* with which we are acquainted, though the colours of the flowers are certainly inferior in richness and splendour to those of many other species.

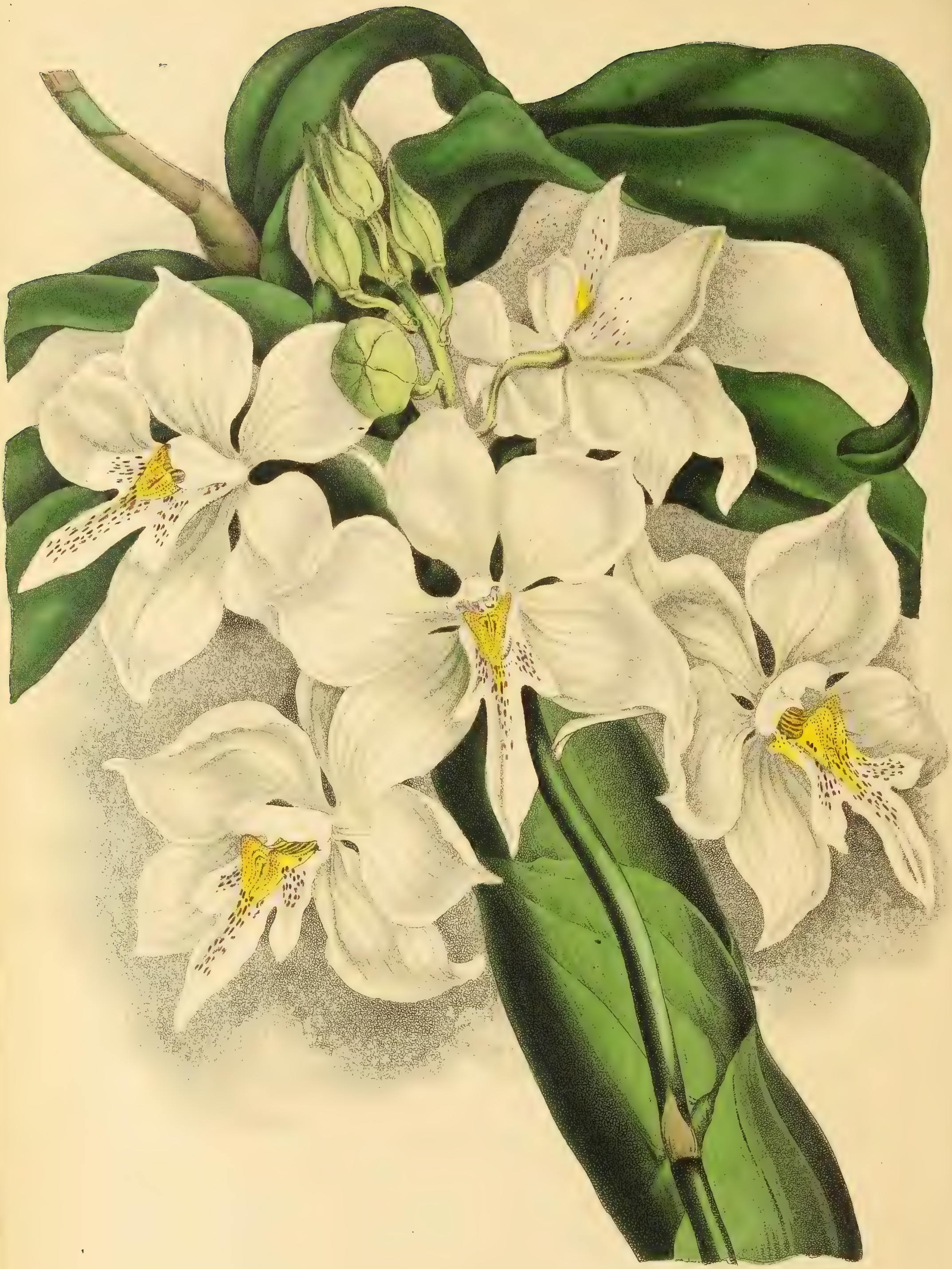
It is presumed to be as much a perennial as any of the other species, and will doubtless prove sufficiently hardy to stand through the summer months in the open ground. From its strong and vigorous habits, it will form a pleasing variety in the flower-garden, if planted amongst others of its allies; and, in this department, will be found a valuable ornament. But it should be kept in the greenhouse to be duly appreciated, as its delicious fragrance will thus be diffused through the atmosphere, and create the most agreeable and pleasing sensations.

The cultivation of this plant contains no new feature, since it only requires to be treated as the old species. A light loamy soil, with careful drainage when kept in pots, and due preservation from damp in the winter months, appear to be the chief desiderata; and it is probable that, with timely and proper attention, it might be induced to assume a prostrate habit, and thus be rendered available for planting in beds.

Propagation by seeds should not be attempted, even if they could be properly matured, as cuttings will strike very rapidly, and plants may be obtained by this method in a few weeks. We would strongly recommend the practice of hybridizing Verbenas, as several excellent varieties have been raised in this manner. The present species, if impregnated with *V. Tweediana*, or *chamædrifolia*, would most probably produce a splendid hybrid.

We are indebted for our drawing to Messrs. Thos. and Wm. Handyside, nurserymen, at Musselburgh, near Edinburgh, who possess the whole disposable stock of this charming species.





Epidendrum bicornutum.

EPIDENDRUM BICORNUTUM.

(TWO-HORNED EPIDENDRUM.)

CLASS.
GYNANDRIA.

ORDER.
MONANDRIA.

NATURAL ORDER.
ORCHIDACEÆ.

GENERIC CHARACTER.—*Sepals* spreading, nearly equal. *Petals* equal with the sepals, or narrower, rarely broader, spreading, or reflexed. *Labellum* wholly or partly united with the margin of the column, limb entire or divided, surface frequently hardened, ribbed, or tuberculated. *Column* elongated, with a recurved margin, often fimbriated. *Anthers* two to four-celled, fleshy. *Pollen-masses* four.

SPECIFIC CHARACTER.—*Pseudo-bulbs* elongated in the form of stems, leafy at the summit. *Leaves* few, linear-oblong, obtuse, thick. *Peduncles* terminal. *Racemes* few-flowered. *Sepals* and *petals* equal, broadly elliptical, acute, concave. *Labellum* free, three-lobed; middle lobe longest, lanceolate, acute, the inside of its base furnished with two horns.

THIS strikingly beautiful Epiphyte is, without doubt, the largest and finest species of the genus to which it belongs. Its charming white blossoms, the base of the lip of which is of a rich yellow colour, and also prettily spotted with pink, constitute it a lovely feature in the orchidaceous house during the time it is in flower, while their very agreeable fragrance administers to the delight of another sense, and contributes greatly to enhance its interest.

Those who are acquainted with the genus *Epidendrum*, are well aware, that by far the greater number of the species produce slender stems, which has led to its division into those with elongated stems, and such as produce what are termed *pseudo-bulbs;*—a phrase expressive of an intermediate state between bulbs and stems, and, as far as our observation extends, confined exclusively to orchidaceous plants.

The present species, by its differing so materially from the usual character of those previously known, both in the size and form of the pseudo-bulbs, and also in the great size of its flowers, was originally the subject of some doubt among botanists, particularly as, for some time previous to its flowering, it had been considered a species of *Cattleya.* But, however much it may resemble that genus in some points, it has been decided, on the first authorities, to be a true *Epidendrum*, and was accordingly assigned to that genus by Sir W. J. Hooker. A figure of it appeared in the Botanical Magazine, p. 3332, from a plant which flowered in the collection of Earl Fitzwilliam, in the year 1834, under the judicious treatment of Mr. Cooper, whose name will always stand connected with the superior cultivation of orchidaceous Epiphytes.

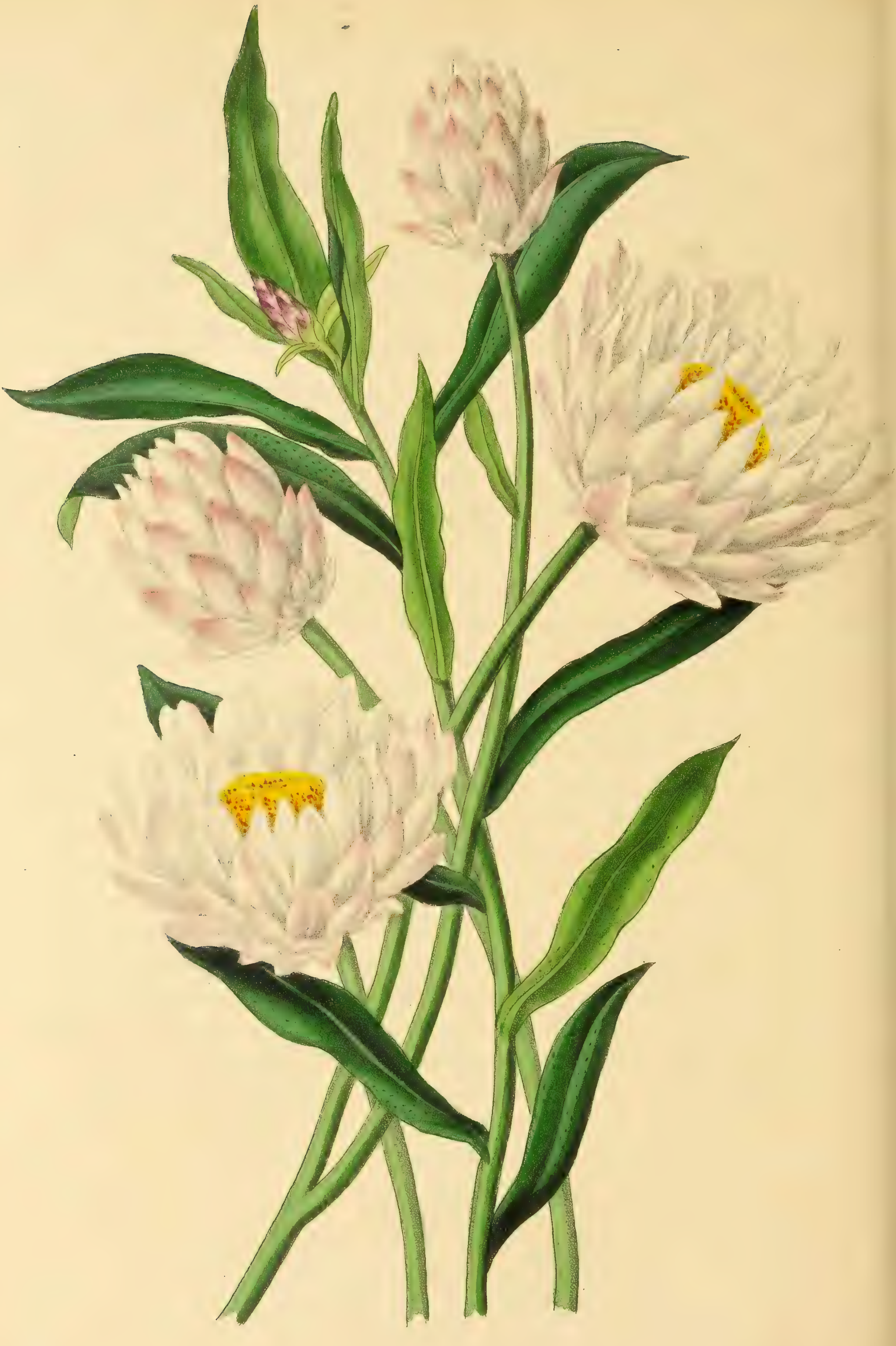
It is a native of Trinidad, and was first received in this country by Messrs. Shepherd, of Liverpool, but at what period we are uninformed. The same treatment may be pursued towards this species as is usually bestowed on the species of *Cattleya;* it will grow freely in a compost of heath soil, chopped moss, and potsherds, not requiring to be elevated so much in the pot as some orchidaceæ. Perfect drainage is essential; and a moderate degree of heat and moisture during the growing season, with a few months' repose after flowering. Although we presume it grows naturally on trees, it will not succeed well when fastened to a piece of wood, under artificial circumstances, and its cultivation should be confined to the pot, as is generally the case with most of its allies.

To propagate it, the usual mode of detaching one of the stems should be resorted to, which may be effected while the plant is in a dormant state; merely observing to keep it as dry as is compatible with the maintenance of its vitality till it begins to push forth young shoots, when it may be excited into vigorous growth by a more liberal application of water, and a greater supply of heat. The young plants should always be supported by a slight stake, placed so as not to be visible, till they have formed a sufficient number of roots to render such a practice unnecessary, otherwise they will not emit roots so speedily as might be desired.

This delightful plant flowered in the orchidaceous house at Chatsworth in the spring of the present year, at which time our drawing was taken. When in flower, its fragrance was perceptible in almost all parts of the house.

The generic name is derived from the Greek *epi*, upon, and *dendron*, a tree, in allusion to the natural habit of these plants, which is, to grow upon the branches and stems of trees.

The specific name refers to the two horn-like processes which form a part of the labellum.



Helichrysum macranthum.

HELICHRYSUM MACRANTHUM.

(LARGE-FLOWERED HELICHRYSUM.)

CLASS.
SYNGENESIA.

ORDER.
SUPERFLUA.

NATURAL ORDER.
COMPOSITÆ.

Generic Character.—*Flowers* tubular; marginal ones few, feminine. *Calyx* imbricated, unequal; scales scariose; interior of the disc longer, membranaceous, shining; rays coloured. *Receptacle* naked. *Pappus* feathery or hairy.

Specific Character.—*Plant* annual, herbaceous. *Stem* erect or ascending, nearly simple, hairy, with one head of flowers on the summit. *Leaves* oblong-lanceolate, or partially spathulate, obtuse, entire; base of the petioles angular or amplexicaul, dilated on both sides, green, hairy. *Heads of flowers* white, tipped with pale rose colour. *Scales* shining internally, broadly ovate, obtuse, mucronulate. *Receptacle* naked. *Pappus* rough.

Every flower to which the popular appellation of 'everlasting' can be applied, would appear, on the bare announcement of such a property, to command the interest and attention of the lover of plants. The mere idea of pleasurable duration seems to carry with it associations of so delightful a character, that, where the object of it is at all calculated to excite similar sensations, its effect upon the mind is equally striking and permanent. But when, by a happy combination of circumstances, this property is found to exist collaterally with the highest and best pretensions to beauty and elegance, it is natural to suppose that the subject of them would sustain a corresponding elevation in the esteem of the observer.

The charming subject of our present figure is both exquisitely beautiful, and its flowers are, in the usual sense of the term, of everlasting duration. It will therefore need no eulogium to introduce it to notice, nor can any effort to describe its merits increase its value. It is one of those intrinsically interesting objects which requires only to be exhibited at once to create both delight and admiration, and render the beholder anxious only to know how he can become possessed of it.

The Swan River colony, a tract which is described as being remarkably fertile in the more beautiful of nature's productions, is the native country of this valuable species, from whence it was introduced to England by Captain James Mangles, R. N., and flowered for the first time in the garden of R. Mangles, Esq., Sunning Hill, Berks, in the present year. It also appeared in the nurseries of Messrs. Rollison and Low about the same period, and from the establishment of the former gentlemen our figure was prepared in the month of July last.

It grows to the height of three or even four feet, producing a great number of stems, from the summits of which the flowers appear. In the earlier periods of its growth these latter are by no means so large as those which are subsequently developed, and the scales of the involucre are of a very deep pink colour. In a more advanced state, the flowers attain an immense size, while the colour is a delicate pinkish white; this will be seen by reference to the accompanying drawing, which was taken at the period just described.

As a greenhouse ornament, it will be found to possess many attractions, and may be treated after the usual manner of cultivating tender annuals. But it will also form a delightful feature in the flower-garden during the summer season; and in this situation its flowers will be more likely to exhibit their true characters, and attain their natural size. We at first thought that it would prove a perennial species, but this expectation has not been realized, and it would appear to be a decided annual. Its flowering may, however, be greatly prolonged, by removing the flowers as soon as they evince any disposition to mature their seed, as a constant succession of blossoms will thus be maintained till the frost destroys them. This practice will be found especially useful with those plants which may be brought into flower in the winter months; and a few specimens of this species might thus be made to contribute to the gaiety of the greenhouse during the whole of that dull season.

It is increased by seeds, in the same manner as other annuals, and these may be sown at any time according to the season at which they are desired to flower. They will of course require protection if sown late in the year, or during the winter.

Plants in the possession of Messrs. Rollison acquire quite a sub-shrubby habit, by having their flowers plucked at the time they begin to fade, and they are thus preserved in the greenhouse through the winter months, flowering again in a succeeding season.

The generic name is from *helios*, sun, and *chryson*, gold; supposed to allude to the golden-coloured blossoms of the original species.

STRICTURES ON PROTECTING EXOTIC PLANTS THROUGH THE WINTER SEASON.

In a valuable work which has recently appeared, entitled "The Greenhouse, Hothouse, and Stove," by Mr. M'Intosh, gardener to the King of the Belgians, at Claremont, we observe an article on a structure called the "Protecting Tent," which is intended for sheltering exotic plants in the winter season. As the structure in question is proposed, and strongly recommended, for the accommodation of those individuals whose means will not permit them to incur the expense of a glass erection, but who are nevertheless desirous of cultivating a few exotic plants, we shall briefly notice its principal features, and then offer a few observations on its adaptation and practical utility.

The situation chosen for such a purpose should be well sheltered (naturally if possible) from winds, but at the same time freely and fully exposed to the solar influences. To ensure a due circulation of water, the bed in which the plants are to be placed should be elevated a foot or more above the surrounding surface, and, if necessary, effectively drained beneath. These points attained, a number of piles should be fixed in the ground, at regular intervals all round the bed, for the purpose of supporting the frame-work which is to be erected over it; and as it is desirable that the latter should be portable, the supporting posts of it should either be fixed into an iron ring attached to the lower piles, or they should be fastened to them by means of hooks, or any other security. The frame may be constructed of any required size, with a span roof, the rafters of which, as well as the pillars which support them, should be from three to four feet apart, and as slender as may be deemed compatible with the safety of the whole.

This frame, by being made of a portable nature, may be placed either on or off the bed at pleasure; and if it is of any considerable size, it may be made to separate into smaller parts, for the purpose of removing it conveniently. During the summer months, it may be entirely taken away, and on the approach of winter its employment will again be necessary. The roof of it may be covered with a tarpauling, or any kind of tarred canvass that will effectually throw off the rain; while mats, or similar light material, may be hung along the sides, to be opened or entirely removed in fine weather. In very severe frosts, the whole of the erection may be covered with a tarpauling, and, over this, any other similar substance may be placed, if considered necessary.

We have thus detailed the principal features of the "protecting tent," and the mode of constructing it. It is difficult to determine its aspect, but we should recommend that it run parallel from north-east to south-west, or between these points and north and south. The bed should be formed of a prepared compost, according to the nature of the plants intended to be grown in it, varying it in different parts to suit the different kinds of plants, and likewise arranging its depth according as the plants are bulbous, herbaceous, or shrubby. The latter will, of course, require a considerable depth of soil, while, for the former, a shallow and well-drained compost is indispensable.

In appropriating a plot of this description to the above purpose, one of the most obvious difficulties is to select plants to which such circumstances are at all suitable. It is well known that exotics, particularly evergreen ones, are frequently injured, even in greenhouses, on account of the insufficient supply of light which our climate affords them in the winter season. In how much greater proportion, therefore, must this injury be experienced where light is necessarily almost wholly excluded! To meet this difficulty, great and constant attention will be required on the part of the cultivator; and whenever the atmosphere is dry, and above freezing point, the whole of the covering must be temporarily removed. To effect this, pulleys may be attached to the top of the erection, by which the canvass may be allowed to slide off when the weather is favourable. By admitting air and light only at the sides, great good will be effected, but by occasionally allowing the plants a few hours of full exposure, more advantage will be derived than would result from their being only partially uncovered at the sides for as many days. In regulating this degree of exposure, the state of the external atmosphere, as regards humidity or dryness, should be as much attended to as its temperature; for, as we have frequently had occasion to remark, excessive dampness is as prejudicial to exotic plants as frosts in the winter months.

Deciduous plants and shrubs are unquestionably the least injured by being secluded from light through the winter, as, at this period of their growth, they are naturally in a state of torpidity, and their parts require no stimulus from solar influences to enable them to perform their proper functions. But even to these a slight degree of exposure is necessary, since, by constant confinement, their buds would be prematurely developed, and, by a necessary consequence, would either perish or produce their leaves and flowers in a very imperfect state. To evergreens, on the other hand, too much light cannot be admitted; for, if their leaves are once permitted to assume a sickly or yellow hue, they will never regain their natural colour, and will probably wither on their first exposure to solar light, to the manifest injury of those subsequently produced, and of the whole plant.

This mode of treatment is peculiarly adapted to bulbs, on account of the winter being their period of rest; and, in the opinion of the Hon. and Rev. William Herbert, a gentleman who has applied his great talents almost exclusively to the examination and cultivation of this class of plants, many of those species which are usually cultivated in the stove, would succeed admirably in such a situation as that we are now considering, provided they could be furnished with a slight bottom heat in the summer; which might be effected either by subterranean flues or hot-water pipes. These latter, or rather the heat with which they are supplied, might be devoted to other purposes in the winter, as nothing further would be necessary than to preserve them from damp and frost, and this object might be easily attained by covering them with the tarpauling before-mentioned.

Under these circumstances, there can be little doubt that many of our exotic plants would attain great perfection, and flower most abundantly in the summer; while their novel appearance in the open ground, when divested of every trace of their winter covering, would certainly contribute much to the charms of the pleasure-grounds. We know of no genus of plants that would have a more splendid effect, or to which this treatment would be more congenial, than the beautiful Fuchsias, those universal favourites; and, in extensive collections, a whole bed of a pretty considerable size might be most appropriately devoted to their culture.

A prepared border in front of an ornamental wall, which latter might also be covered with exotics, would afford admirable facilities for protecting and cultivating many of the choice bulbs, herbaceous plants, and even dwarf shrubs, which are commonly kept in the greenhouse; and we are convinced, that such a system of cultivation is not sufficiently regarded in these days of refinement in horticultural, as well as other processes.

One important principle necessary in carrying either of these designs into effect, should not be lost sight of. It is that of commencing to cover the erection, of whatever kind it may be, at an early period, every night during the decline of the autumnal season; for, by this practice, not only are early frosts guarded against, but the heat of the ground being much greater at this season than that of the air, is thus prevented from evaporating, and the plants are retained in their accustomed health and beauty much longer than they would otherwise be, and their branches and buds have a much better opportunity of arriving at a state of maturation previous to their powers being suspended.

The principal objections to the practice here recommended, are, that the covering of the erection will have a rather unsightly appearance during the time it is found necessary to employ it; and that, in very severe winters, a sufficient degree of light cannot be admitted to preserve the plants in a healthy state. We have previously shown how the latter may be in some measure obviated, and as the former is of very trifling importance at that dull season, we cannot allow it to influence our opinion. The system therefore has our cordial recommendation, not only as affording facilities for growing many beautiful plants, where otherwise they could not be admitted,—which is certainly of the greatest moment,—but also as a means of introducing a number of most ornamental exotics into the pleasure-grounds, which have hitherto been confined to the greenhouse or stove, and which, by being fully exposed to the atmosphere during the growing or summer season, and not having their roots confined in a pot, would luxuriate and flower more in their natural character, than any of those which were kept in a house could possibly do, even though they were supplied with every substitute for the great natural agents which the ingenuity of man could devise.

FIRE-HEAT DURING THE WINTER MONTHS.

We are pleased to observe that a rational system of treatment is gaining friends and supporters. We cannot refer to any old work upon gardening, without meeting with directions to maintain a constant temperature of 65 to 75 degrees by fire-heat in the plant-stove, and with warnings of the imminent peril to which the plants of warm climates would be exposed, were the mercury to descend to, and remain for a few hours at, 55 degrees. What is still worse, however, every class of cultivators have contributed by their practice to maintain the prevailing error, and it has universally been considered a fundamental principle in the management of the natives of tropical regions. Like almost every other subject, it has been imbibed by each succeeding generation from their progenitors without due investigation, and few have been found sufficiently bold to encounter public ridicule by denouncing its absurdity.

The great expense incurred by the adoption of this system, has tended to banish stove exotics from our collections in general; but were persons once experimentally convinced that ninety-nine out of a hundred of our most beautiful woody stove plants might be preserved, in perfect safety, by a minimum temperature of 45 degrees, we conjecture that our villa gardens would assume a different appearance. We say *preserved*, because we are convinced that a season of complete repose is required by every perennial throughout nature. The leaves of numbers of woody shrubs will fall, under the cool treatment; thus, winter after winter, we have seen the *Brunsfelsia Americana* (one of the most fragrant tenants of the stove,—a native of the West Indies) shed every leaf in detail after December; and the same may be said of all the species and varieties of *Hibiscus Rosa Sinensis*. *Coffea* has, on the contrary, retained its glossy leaves, and even continued to grow, at 50 degrees; and as to the purple-fruited guava, (*Psidium Cattleyanum*,) it remains a permanent evergreen at a degree or two above freezing: we had a plant which ripened several large fruits during the rigours of January 1838, when the water of a cistern under the glass was coated with ice; and this month (October) we have gathered a complete crop of berries, which had been subsequently produced. Thus, cordially acquiescing in the remark, under the head "Operations for October," p. 215, that the *eternal spring* affected by many in our stoves "is a most egregious and dangerous error," and reiterating the advice, that our readers should "commence this season by dispensing with half the fire-heat usually employed," on the ground of economy and true philosophy; we solicit their attention to the few following remarks, which the facts that have come within our knowledge have elicited.

The *smoke nuisance* has before been noticed, and we rejoice to perceive that, ere long, we may hope to witness its entire removal. The present year,—since we penned a few observations on the applicability of gas to the purposes of the gardener,—has brought to public notice two grand improvements in the machinery for the diffusion of radiating heat.

Dr. Arnott's stove is the best known and most appreciable of the two: it consists of an iron case or box, so contrived that the productions of a perfectly regulated combustion shall in no way interfere with the atmosphere of a room or apartment; and it so economises fuel, that two or three pennyworth of that intractable, smokeless substance, *coke*, will suffice to distribute heat regularly, without much attention on the part of the attendant, during twenty-four hours. This stove is assuredly suitable in its principle to greenhouses and temperate hot-houses, where a moderate heat only is required; and it might likewise be rendered an ornamental object. The means of diffusing moisture as well as heat, at the growing season, by the addition of a shallow trough or cistern, is also placed at the option of the gardener.

But highly as we think of this invention, there is another just announced, which promises to offer far higher advantages. A discovery has been made, we believe simultaneously by three persons, which, at a very trifling expense, presents the means, not only to remove smoke, but to render every particle of the fuliginous matter available to the production of heat, and consequently to the saving of an immense quantity of fuel. The parties, we hear, have coalesced, and secured their discoveries by patents.

How far these may interfere with the application of the machinery to forcing-houses, stoves, vineries, and greenhouses, we know not; but we write upon the grounds of perfect conviction, from the assurances of a close and critical observer, that, by the instrumentality of a jet of steam distributed over a black and smoky surface of even *wetted small-coal*, every portion of smoke became instantly ignited, distributing a volume of heat in lieu of a cloud of vaporous soot. We do not wish to anticipate, but merely to inform the inquiring reader that there is *that* in progress which, at no distant day, unless some cross events interfere, will wholly destroy a two-fold nuisance, and increase the efficiency of our furnaces in proportion as it economises their means of supply.

We hope that the invention will proceed, and be fully acted upon; for nothing, of a certainty, could so tend to enhance the pleasures of horticulture, as the possession of a method to produce increased temperature, relieved from that serious outlay of money which "gives pause" to many an ardent admirer of those beautiful subjects of the warmer climates, that are, by hundreds, introduced every succeeding year, through the zeal of our collectors.

The discovery of the *combustible energy of steam* implies so many interesting chemical phenomena, that we only wait for further facts to enable us to invite the attention of reflecting readers to an investigation of their character and results.

FLOWER-GARDENS AND THEIR ORNAMENTS.

A FLOWER-GARDEN, if tastefully designed and effectively disposed, is second to no other kind of garden ornament in interest and attraction. Within its limits, however confined, almost every species of embellishment, both natural and artificial, may, on a proportionate scale, be arranged and exhibited to the greatest advantage. Structures the most diversified, parterres and plots of the most varied form, and plants of ever-varying habit and hue, may be associated together in a flower-garden with such consummate skill and captivating effect, as to cast a charm over the whole, of which no other department is at all susceptible.

The lamentable absence of this most interesting feature in the gardens of the less wealthy horticulturists, has induced us to publish a series of designs adapted to small estates, whereby all persons may learn how to dispose a small flower-garden worthy of the most magnificent domain. The subjoined figure is the second design we have furnished with a view of attaining this desirable object, and represents a flower-garden of one-third of an acre in extent, surrounded by low shrubs, either evergreen or deciduous, or both; through the spaces left between which, views of the other parts of the pleasure-ground may be obtained, or, if necessary, walks may be formed.

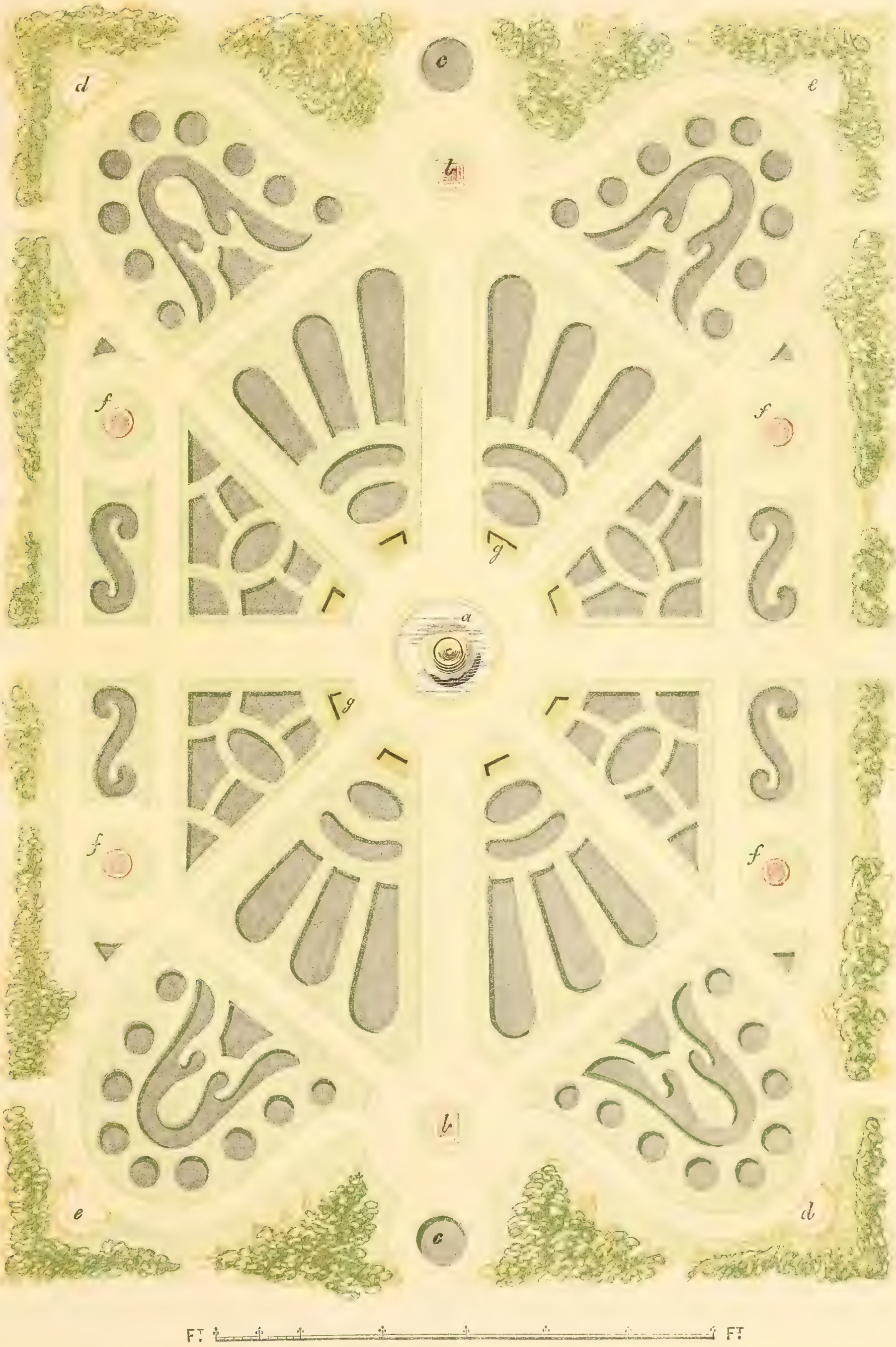
By reference to the letters in the figure, the different parts will be better understood. In the centre is a Triton and dolphin fountain, *a*, with an ornamental basin twelve feet in diameter; *b*, *b*, are pedestals for statues; *c*, *c*, are circular flower beds; *d*, *d*, rustic alcoves; *e*, *e*, Swiss alcoves; *f*, *f*, pedestals for vases; and *g*, *g*, eight mignonette boxes and flower baskets, placed on the grass plot, at regular distances round the central walk.

The general outline of this flower-garden represents the union of two crowns at their base, and the attentive observer will not fail to remark that an ornamental structure is seen from every point of the walks. As in previous designs, the dark ground-colour is intended for flower-beds, while the green delineates the extent of grass plot or lawn. By the liberal intermixture of these varied, but strikingly-symmetrical surfaces, a most interesting diversity is obtained; and as the grass in all cases forms the verge, box or other edgings will be wholly dispensed with.

It is needless to recapitulate the different features, for the purpose of showing their adaptation to each other and to the garden, or to explain the manner in which they are to be introduced, or the mode of constructing them. Every reader will at once perceive, from the mere mention of their respective designations, and the reference to the situations they are intended to occupy, what will be the most appropriate and ornamental form in which they can be introduced. For the sake of contributing another delightful object to heighten the effect, we would suggest

FLOWER GARDEN.

DESIGN NO. II. FIG. X.


c
d
e
b
f
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g
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e
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FT

that the two circular flower-plots *c*, *c*, might, if desired, with great propriety be converted into small rockeries, and the flower-garden would then contain every necessary or desirable feature to render it complete.

The great number of flower-beds which form the central part of the garden, will furnish the means of grouping some of the most ornamental border plants; and, by a judicious selection of sorts, so as to have an interesting combination as well as variation of colours,—such a system will produce a most engaging effect. In modern flower-gardens, the old practice of having a variety of plants in one large bed, and arranging them according to their height and colour, has been entirely superseded, and the system of grouping plants of one sort in small beds substituted for it. That the latter method possesses many advantages over the former, although it is not so extensively adopted as it deserves to be, needs little argument to prove; and we shall now enter briefly into the mode of effecting it.

We propose banishing entirely from the flower-garden all such plants as are perfectly hardy, or, in other words, those which are generally termed hardy herbaceous plants, and supplying their place with the more showy and favourite kinds which require protection during the winter. We would not, however, exclude those sorts which are ornamental, and especially the dwarfer ones, but only those tall, straggling, uninteresting, or rather less interesting species, which are much better adapted for the borders of shrubberies, or other parts of the pleasure-grounds, and which would exhibit themselves much more advantageously in such situations.

A number of garden frames or pits are essential for the purpose of preparing young plants for the flower-garden; but no artificial heat will be required, except in one frame, which must be devoted to the work of propagation. Early in the autumn this latter operation should commence, and Pelargoniums, Petunias, Verbenas, Calceolarias, and all the splendid train of et-ceteras, should then be struck in large quantities. Immediately on their appearing to have formed roots, they should be potted into small pots, and removed to the cold frame or the open air, to make way for a succession of others of a similar nature. This process should be continued till the commencement of frosty weather, or till a sufficient number of plants has been obtained; and the young stock thus procured may be protected through the winter in cold frames, with due care in watering them, admitting air, and preserving them from frost.

A small and well-sheltered piece of ground in a retired part of the garden is likewise necessary, in order to raise a succession of the more hardy, but not less showy annuals, biennials, and perennials. In this spot, seeds of the more hardy kinds of annuals may be sown in the autumn, and these will be ready for removing to the flower-garden early in the spring, where they will speedily flower. Many dwarf and charming perennials might also be propagated in this department, either by seeds or otherwise, to be transplanted to the flower-beds a short time previous to their flowering, and returned to their parent soil when the flowers have faded.

We find, however, that we must reserve any further observations on this subject till a future opportunity, when we shall bring forward some directions for the arrangement of the different kinds of plants, both with regard to the individual beds, and the whole of them collectively, and endeavour to afford data whereby not only the form and disposition of a flower-garden may be improved, but, what is of equal importance, the plants which are cultivated in it may be regulated and distributed so as to produce the most pleasing and ornamental effect.

NEW AND RARE PLANTS,

FIGURED IN THE LEADING BOTANICAL PERIODICALS FOR NOVEMBER.

CLASS I.—PLANTS WITH TWO COTYLEDONS (DICOTYLEDONEÆ).

THE MALLOW TRIBE (*Malvaceæ*).

Pavonia Schrankii. Schrank's Pavonia. This handsome-flowered new species was received from the Botanic Garden, Berlin, in the year 1836, and flowered in the Edinburgh Botanic Garden in July, 1837. The blossoms, which are of a rich scarlet colour, are exceedingly showy, while their dark anthers contribute much to their beauty; but, unfortunately, they expand only during the forenoon of the day, and though the leaves are large and deep green, the plant is described as being of a coarse character, and not likely to become a favourite. All admirers, however, of brilliant-coloured flowers, should certainly possess it. It is a stove plant, and of easy culture. Sprengel unites *Lebretonia* with this genus, and other eminent botanists incline to the same opinion; while Sir W. J. Hooker states that the only distinction appears to be in the reported dehiscence of the capsules of *Lebretonia*, which property has not been observed by that gentleman. *Bot. Mag.* 3692.

THE INDIAN FIG TRIBE (*Cactaceæ*).

Melocactus depressus. Depressed Melocactus. One of the new plants which have rewarded the researches of Mr. Gardner in the districts near Pernambuco, and which have been sent to Woburn Abbey and the Glasgow Botanic Garden. The drawing in the Botanical Magazine has not been taken from a flowering specimen, though the flowers are said to have been produced previous to its being shipped for this country, and are supposed to be small and red. The figure represents a number of pretty-looking seed-vessels, which arise from the midst of a dense cluster of aculei on the apex of the plant, and are of a delicate, transparent, pink hue. When dissected, they were found to contain a few black, shining, reticulated seeds, which will most probably vegetate. The shape of the plant is that of a flattened cone, with about ten broad furrows, and as many alternate ribs, on the edges of which the clusters of spines are few in number and much scattered. The plant has a very handsome appearance, on account of the large intervals of deep green which occur between every rib. *Bot. Mag.* 3691.

THE PEA TRIBE (*Leguminosæ*).

Hovea Manglesii. Captain Mangles's Hovea. A new species, of a very neat character, nearly allied to *H. lanceolata* and *H. trisperma.* It first flowered in the garden of R. Mangles, Esq., of Sunning Hill, in January, 1837; since which time dried native specimens have been received from Captain James Mangles, R. N., after which latter gentleman the species has been named. The leaves are long, linear, reticulated, and mucronulate, and one of the distinctive characters of the species is, that these organs are clothed beneath with "long, entangled, tornlose hairs, which are scarcely at all glandular at the base." The flowers are of a deep purple hue, and are produced numerously. It is a greenhouse shrub, requiring the usual treatment of its allies, and increasing freely by cuttings. It is remarked that, in the wild specimens, the leaves are scarcely half as broad as those of the cultivated ones; and the same difference has been observed by us between a specimen in the collection of Messrs. Low and Co., Clapton, and the figure in the Botanical Register. *Bot. Reg.* 62.

Compositæ.

Helichrysum macranthum. For an account of this species, see a former part of the present Number. The figure in the Botanical Register represents the flowers much darker than those in our drawing, and not nearly so large, both which differences are undoubtedly occasioned by the different periods at which the original drawings were made; ours having been taken when the plant was in full perfection, while that of the work in question was made much earlier, from the garden of R. Mangles, Esq. In speaking of this species, Dr. Lindley observes, that the number of beautiful plants which the Swan River colony contains, and which have not hitherto been introduced to this country, is truly astonishing, and would abundantly reward the researches of collectors. *Bot. Reg.* 58.

Stevia fascicularis. Close-headed Stevia. An interesting, though not a showy, greenhouse, herbaceous plant, seeds of which were imported from Mexico by G. F. Dickson, Esq., and presented to the Horticultural Society. It produces its neat white flowers (which are very sweet-scented) in dense terminal clusters, from the extremities of the principal or lateral shoots, and they form an ornamental feature in the greenhouse during the autumnal months. It is extremely easy to cultivate, as it will thrive in almost any soil, and cuttings will strike with great rapidity. *Bot. Reg.* 59.

CLASS II.—PLANTS WITH ONE COTYLEDON (MONOCOTYLEDONEÆ).

THE COLCHICUM TRIBE (*Melanthaceæ*).

Merendera caucasica. Caucasian Merendera. This pretty little half-hardy bulbous plant greatly resembles some of the species of *Colchicum* in general appearance, and, indeed, is very closely allied to that genus. Its foliage, however, is somewhat broader, and it appears to flower at a different period, as, in the Glasgow Botanic Garden, it blossoms in the early part of the spring. It is kept in a cold frame in that establishment; but is, we believe, quite hardy in the latitude of London, and in the open ground would probably flower later. It is a native of the Caucasus and Middle Iberia, and plants of it have been introduced to the Glasgow Botanic Garden by Dr. Fischer. *Bot. Mag.* 3690.

THE ORCHIS TRIBE (*Orchidaceæ*).

Paxtonia rosea. Pink Paxtonia. A beautiful as well as highly curious orchidaceous plant, received by Messrs. Loddiges from Mr. Hugh Cumming, of Manilla. It much resembles several species of *Bletia*, both in appearance and habit, but is essentially different from them in the structure of its flowers. These latter are composed of what would appear, at first sight, to be six nearly equal petals and sepals, three of each; but one of these parts is described as the labellum, and is said to be only distinguishable as such by its position. The cylindrical column rises erect in the centre of the flower, and is of the same colour as the other parts, *i. e.* a beautiful rosy pink. It is a free-growing and also a free-flowering plant, requiring the same treatment as the genus Bletia. *Bot. Reg.* 60.

Catasetum atratum. Dark-flowered Catasetum. This very handsome new species combines the character of the late genus *Myanthus* with that of *Catasetum*, and in this respect confirms the propriety of abolishing the former genus, and also exhibits anew the tendency of these plants to vary in character. The flowers are produced in long pendent racemes; the sepals are internally of a deep brownish-purple colour, and the petals are prettily spotted with brown; the labellum is cucullate, much denticulated, of a greenish-yellow colour, and, like the petals, spotted with brown. It is undoubtedly one of the most ornamental species of the genus, and was imported by Messrs. Loddiges from Brazil. Dr. Lindley states that he has been informed by Mr. Schomburgk that *Catasetum* and *Myanthus* produce no seed, while *Monochanthus* is seed-bearing; a fact which is certainly not a little extraordinary. Similar information has likewise been furnished to Mr. Henchman, of the firm of Messrs. Low & Co., from a gentleman resident in Demerara; who further affirms, that he has raised plants from seeds of *Monochanthus* which partake of the characters of both the other supposed genera. *Bot. Reg.* 63.

NOTICES OF NEW AND RARE PLANTS

IN FLOWER IN THE PRINCIPAL NURSERIES IN THE VICINITY OF LONDON.

Messrs. Henderson's, Pine-Apple Place. *Gesneria oblongata.* This very handsome species, which is almost perpetually in flower, particularly at this season of the year, is a most valuable ornament to the stove. It is flowering beautifully, however, in the *greenhouse* of these gentlemen, and appears to thrive most vigorously in such a situation;—a fact with which every cultivator should be made acquainted. The flowers are of an oblong form, with an expansive corolla, and of a bright scarlet colour, prettily spotted internally. *Lophospermum scandens.* We again notice this new species for the purpose of informing our readers that it is an autumnal-flowering one, and makes an excellent display in the greenhouse at the present time. From what we have seen of its habits when planted out in the open border, it would appear to be a trailing, rather than a climbing plant; although, when supported by stakes, it assumes a climbing habit.

Mr. Knight's, Chelsea. *Cattleya Mossiæ.* A small specimen of this superb plant recently flowered in the orchidaceous house of this gentleman. The colours of every part of the flower are much darker than those of *C. labiata*, to which, however, this species is closely allied. The lip of the flower is a truly magnificent object, and is certainly superior in richness to that of *C. labiata.* It may with propriety be considered the most splendid of this extremely beautiful tribe. *Anneslea tomentosa*, vel *Houstonii.* A singular plant, with the above designation, is now in flower in the stove of this nursery. It has handsomely-pinnated foliage, much resembling that of *Clianthus*, or some of the species of *Acacia*, while the flowers are produced in large clusters at the extremities of the shoots; their principal feature being that of protruding a bunch of delicate pink filaments, which have a most interesting appearance. It is an ornamental plant, and blossoms most abundantly. *Phlox Youngii.* An exceedingly pretty species, with pure white flowers, and growing about two feet in height. It is blooming freely in the greenhouse, but, we presume, is quite hardy.

Messrs. Loddiges', Hackney. *Cœlogyne maculata.* An extremely elegant and lovely little orchidaceous plant, of East Indian origin. The pseudo-bulbs are partially flattened round the edges, but rise to a cone in the centre, from the apex of which it would seem that the leaves are produced, but the plant is at present in a leafless state. The flowers arise in short peduncles from the base of the pseudo-bulbs; they are solitary, and the sepals and petals are whitish, while the labellum is spotted and blotched in the most exquisite manner with a rich and striking variety of colours. These gentlemen possess a plant of it in a flowering state. *Oncidium Russelianum.* A neat and very pretty species, and at present rare. It is inferior to many of its allies, but nevertheless contributes to form a pleasing and interesting variety in the orchidaceous house, in which structure it is now producing its flowers. *Curcuma Roscoeana.* One of the many plants discovered by Dr. Wallich in the East Indies, and named by that gentleman after the celebrated botanist Roscoe. The flowers, though comparatively insignificant in themselves, are produced in a terminal spike, and severally enveloped in a brilliant scarlet sheath, which imparts to them a most ornamental character. Plants of it are now splendidly in flower in the stove of this nursery.

Messrs. Low & Co.'s, Clapton. *Crowea saligna.* In the absence of any remarkably new feature, we notice a very handsome specimen of this valuable old plant, which is now completely covered with its beautiful pink blossoms in the greenhouse of this nursery. To all who are desirous of cultivating those plants which develop their flowers at this most gloomy season, we cannot recommend a more suitable object than that above-named. *Helichrysum macranthum* is still producing its charming flowers in the open ground, and appears likely to remain in this state till more severe frost occurs. *Buddlea Madagascariensis*, another autumnal-flowering greenhouse plant, deserves to be much more extensively cultivated than it is at present, as it is now exhibiting a rich profusion of its showy orange-coloured blossoms.

Messrs. Rollison's, Tooting. *Cycnoches chlorochilum.* A remarkably large-flowered new species, the flowers of which greatly exceed those of the species previously known in size, and are of a greenish-yellow colour. It has recently flowered in the collection of these gentlemen. *Maxillaria Rollisonii.* One of the smallest, but not the least interesting of Maxillarias; before noticed by us, but now producing a great abundance of its pretty blossoms. It is suspended from the roof of the orchidaceous house in the half of a cocoa-nut shell, in the bottom of which holes are bored for drainage, and the plant is growing in reduced moss. We mention these facts, as most growers of orchidaceæ are attached to novelties, and we conceive this to be one, besides forming a most suitable receptacle for the plant, and exhibiting its beauty most favourably. *Cyanotis axillaris.* This is not a new plant, but is certainly a very rare one. It is closely allied to the genus *Tradescantia*, and much resembles the species of it in habit. An astonishing profusion of its charming little blue blossoms is now expanded, and it is a great ornament to the stove.

Messrs. Young's, Epsom. *Lisianthus Russelianus.* This splendid plant is flowering in great perfection in the nursery of the gentlemen above named, and its large blue flowers make a most brilliant display. It should be observed that this is the genuine species, as some very inferior varieties have been cultivated in many collections. *Cytisus nubiginensis.* A very interesting species, with slender, pendent branches, from the joints of which numerous clusters of neat white blossoms are produced, these latter being delightfully fragrant. It is a remarkably free-flowering plant, and is particularly valuable on account of its blossoms appearing at the present period. *Roella elegans.* This charming little plant is now blooming in great beauty in the stove of the gentlemen before mentioned, and its lively blue flowers contribute much to the appearance of that department.

NOTICES ON THE CULTURE OF NEW AND RARE PLANTS IN THE PRINCIPAL NURSERIES IN THE VICINITY OF LONDON.

On the Treatment of Passiflora Loudoniana and P. kermesina.

These two extremely beautiful species of one of the most interesting genera of stove-climbing plants with which we are acquainted, have recently been the subjects of some erroneous impressions in the horticultural world, and many cultivators have been disposed to recommend for them a situation in the greenhouse, instead of retaining them in the department usually assigned to them—the stove. As we have seen them cultivated in the London nurseries under a great variety of circumstances, and in both of the situations above alluded to, we may perhaps be allowed to state the effects of the different systems of treatment, and deduce from thence the most convincing proofs as to which is most congenial.

The oldest and best known of the above two species (*P. kermesina*) has always, as far as our observation extends, been assigned a place in the stove; but *P. Loudoniana* having been recently introduced to our collections, and some cultivators having discovered that the leaves of the latter species (from a cause which they appear to have entirely overlooked) assumed a sickly and morbid appearance when kept in a stove, they have been induced to remove both the species to the greenhouse; and, as we conceive, without due reflection, have recommended the practice for general adoption.

That such a system of treatment is radically erroneous in principle, and would prove seriously injurious in practice, we have received ample testimony, and shall now proceed to lay it before our readers. And as it materially affects the health and beauty of two of the most ornamental of all stove plants, it cannot be considered unworthy of notice.

The principles upon which the successful cultivation of the above two plants depends, are heat, moisture, and shade. We assert this from actual experience, as well likewise as from analogy and the evident natural habits of the species. Heat and moisture are perhaps the least necessary of the three, and should be applied in equal proportions the one to the other; but they are very far from being useless, or even unnecessary, and from repeated and long-continued observation we consider them absolutely essential. Shade is, however, of much greater importance, and it is to a want of a knowledge of this, or the lack of a disposition to apply it, that cultivators have mainly to attribute any ill success they may have experienced.

Thus much premised, it may be asked whether these necessary principles can be afforded in a greenhouse. That heat and moisture are incompatible with the usual treatment of greenhouse plants, every person must be prepared to admit; and that shading would be highly prejudicial to most of the plants usually cultivated in a greenhouse, must likewise be well known. In very extensive collections, where Camellias and other similar plants are sometimes kept in a house with a northern aspect, the latter objection would certainly not apply; but such is very rarely the case, and even where it is, both heat and moisture will be still wanting, without which, we are persuaded, these charming species would never flourish.

Discarding at once, then, the notion that a greenhouse is the most favourable, or indeed is at all a suitable, situation for the plants whose treatment is now under consideration, and asserting that the only reason for the failures which have been experienced in their cultivation when kept in a stove, is their having been too freely exposed to the solar influences without any modification of them by artificial shading, we will venture to affirm, that if either or both of these species are kept in a moist stove or orchidaceous house, where shading will always be of great advantage to the other plants with which they are assembled, and where in consequence it is usually employed, they will attain to a degree of perfection which has hitherto only been witnessed in the collections of those who have practised the system of treatment thus generally propounded.

To an orchidaceous house, indeed, these two species appear to us to be almost indispensable requisites; for, besides the peculiar adaptation of the treatment to which that tribe of plants is usually subjected to those here noticed, there is a degree of beauty and elegance in these two species of *Passiflora* which contributes most astonishingly to the gaiety and interest of such a structure, as the great profusion and almost constant succession of their splendid flowers, will always compensate for any deficiency in the display of the flowers of the Orchidaceæ, and even when they are in their greatest perfection will add a charm to the appearance of the whole, of which none but those who have witnessed its effect can have any adequate conception.

They should not be trained to the rafters or roof of the house, but a number of strong wires or chains may be extended longitudinally from one end of the house to the other, supported by the rafters, and allowed to hang loosely, so as to form a kind of semicircular festoons. To these chains the plants in question may be attached, and they will also answer the purpose of supports, on which can be suspended any of the more epiphytal kinds of Orchidaceæ. This practice has been adopted with excellent effect by the Messrs. Loddiges; and other cultivators of Orchidaceæ would greatly add to the appearance of their collection by following the example of those gentlemen.

It may be well to mention, that the moisture recommended in a preceding part of this article applies more to that supplied in the form of vapour, than to that which is furnished to the roots, as the latter require only an ordinary degree of it.

OPERATIONS FOR DECEMBER.

TOWARDS the middle of this month the winter usually commences, and severe weather may be expected. All valuable shrubs and plants which may be deemed hardy, but the hardiness of which has not been sufficiently tested, should be afforded some kind of protection, that the fearful ravages committed by the frost in the preceding winter may not be reacted during the present season. There are various modes of affording shelter to plants, all of which are useful, but most of them are especially applicable to different kinds. Thus, litter for herbaceous plants, old bark for bulbs, and mats or straw hurdles for shrubs and trees, are respectively found most suitable for those peculiar sorts.

In making use of any kind of protection for plants in the open ground, the first and principal point is to attend to the preservation of the roots; for, if this is duly effected, most plants will recover and sprout again, even though the stems and branches should be entirely destroyed. This practice is very frequently neglected by cultivators, who appear to think only of preserving the stems and branches, which is certainly sufficient where this end can be fully accomplished, but where the protection afforded to those parts proves inefficient, in nine cases out of ten the roots perish with them. Hence the importance of sheltering the roots likewise.

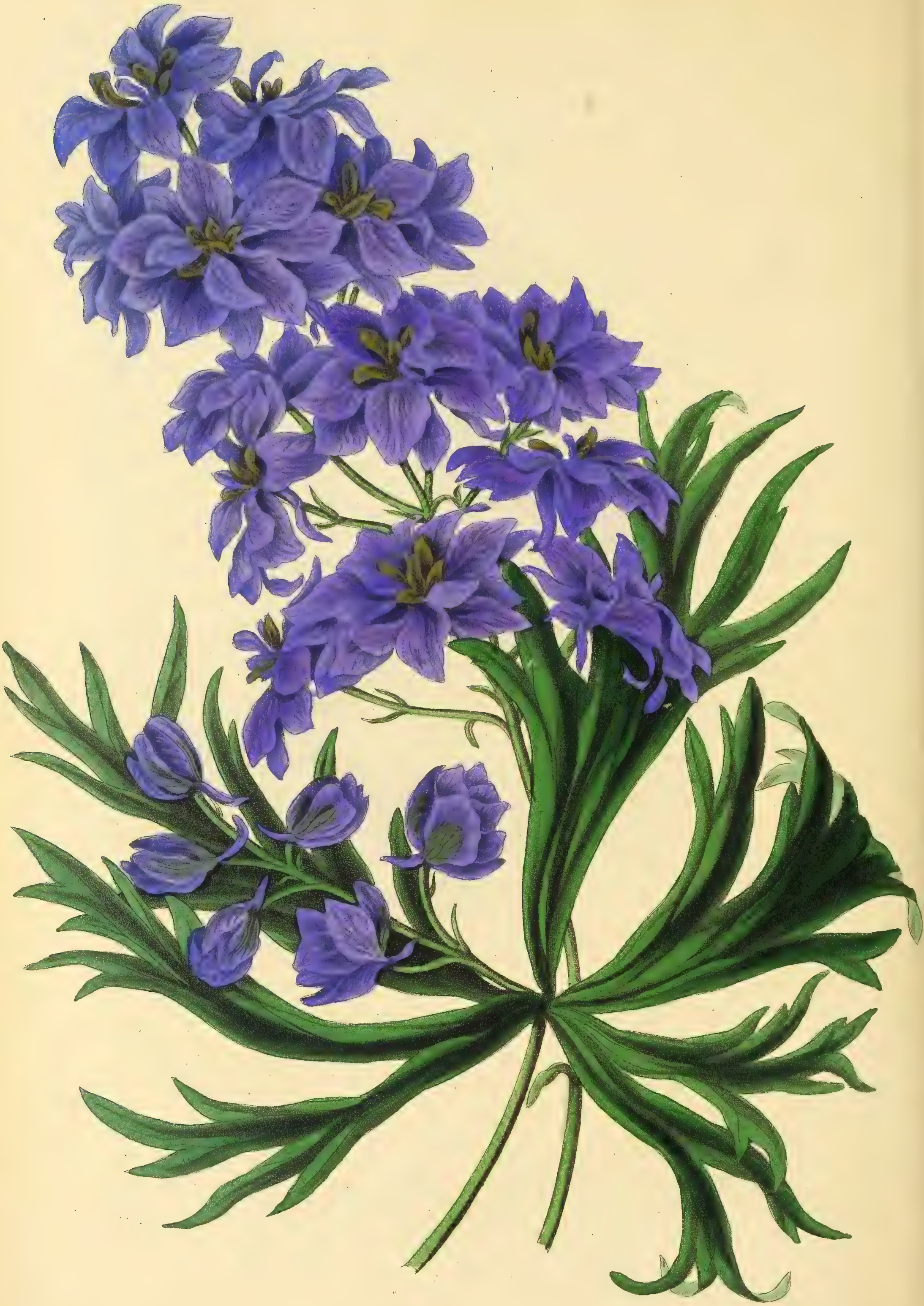
Whatever material is used for this purpose, the necessity of its being of a dry nature, and also, if possible, capable of repelling wet, should always be kept in view. Moisture, where it exists in any quantity, is sure to attract the greatest degree of frost, and therefore, when the roots of plants are surrounded and saturated with a superabundance of it, they will be much more exposed to injury on that account. That covering, then, which is found to be most impervious to rain, will undoubtedly prove most beneficial. By thus protecting the roots, we by no means wish to supersede the use of other covering for the more exposed parts of plants, but merely to see these two desirable objects distinctly yet conjointly effectuated; and every practicable method should by all means be adopted for preserving the upper portions of shrubs.

In the management of all plant structures, we have little to recommend beyond what was inserted in our last month's "Operations." Stove and other plants should be placed on a dry and even surface, and not plunged in bark or any other material of a similar nature, as this would tend to keep them too moist, according to the temperature we wish to see employed. All climbing plants, whether stove or greenhouse, that are trained to the rafters or roof, should be vigorously pruned; as, besides this being the proper season for performing that operation, it would remove a considerable obstruction to the rays of light, which, being very limited at this season, should be allowed to descend, without any mitigation, on all kinds of plants. When fire-heat is required in any department, the temperature should be elevated very gradually, and never be suffered to rise higher than is absolutely necessary. A rapid change in the temperature of a house from cold to heat, or the employment of a great degree of heat when only a very trifling quantity is required, is productive of immense injury to plants, and all good cultivators most cautiously endeavour to shun it.

It is of great importance that the management of the furnaces connected with plant-houses be intrusted to an individual who thoroughly understands the principles on which heat should be applied. There is nothing hyperbolical in the assertion, that, on the abilities of such a person to perform the office intrusted to him, the health and beauty of the plants entirely depend. This should render cultivators cautious as to who they employ for such a purpose, and induce them strictly to inspect the management of that department. All plants should now be kept as near to the glass as is consistent with their safety; for, even in this, there is a degree of propriety to be observed, which, if exceeded, would greatly endanger the subjects of it. It should not be forgotten, that frost enters chiefly through a glazed roof, and the plants should be placed at just such a distance from it as will secure them from that destructive principle; though it is better to keep them at a trifling distance, and protect them by covering the house with mats in very severe weather.

Cold pits and frames will now be found among the most useful of plant structures. Auriculas, Carnations, and Polyanthuses, with all tender plants that have been removed from the flower-garden, or are in preparation for that department for the ensuing season, are by this time securely housed in these or similar erections. They should be carefully tended for the purpose of admitting air in favourable weather, and duly protected with mats, hay, or dry litter, during frosts.

The beds and borders of the flower-garden and pleasure-grounds may still be dug roughly over, if this operation have not previously been completed. Shrubs of all kinds may be pruned if necessary, and especially climbing plants, which must also be nailed to the wall, or fastened to the trellis against which they may be growing, at the same time. Collect the seed of Rhododendrons, if it is wished to be saved, and sow it in the early part of the succeeding spring in a slight hot-bed. Make, and plant, cuttings of any species of *Ribes*, or other similar plants; those shoots which are slipped (not cut) off, succeed best, and a sheltered situation, with a light loamy soil, is most suitable. All the buds, except those at the base and the two uppermost ones, should be extracted, as, if left, they would only weaken the young plant; and, in inserting them into the ground, care should be taken to place the earth close around them, that no cavities may be left in which water can collect. Beds of Tulips and other bulbs, should be covered, when necessary, with a little dry litter, and all insects that would injure or destroy the bulbs should be carefully looked after. Remove any trees or shrubs which require shifting, or that may be desired in any other part of the garden. Always take them up with as much earth as possible about their roots, and be careful to preserve the fibrous roots entire. Examine Dahlia roots occasionally, and adopt gentle measures for the expulsion of damp from the apartment in which they are kept, if it shall be found to have entered.



Delphinium Barlowii.

DELPHINIUM BARLOWII.

(MR. BARLOW'S LARKSPUR.)

CLASS.		ORDER.
POLYANDRIA.		TRIGYNIA.

NATURAL ORDER.
RANUNCULACEÆ.

GENERIC CHARACTER.—*Calyx* coloured, deciduous, five-sepalled; sepals superior, prolonged at the base into a hollow spur. *Petals* four, sometimes growing within each other; two superior, prolonged at the base into appendages contained within the spur. *Stamens* indefinite. *Ovaries* one to five, usually three. *Capsule* entire, distinct, one-valved, one-celled. *Seeds* numerous, dry berries.

SPECIFIC CHARACTER.—*Plant* perennial, growing usually from four to five feet high. *Leaves* with five principal divisions, deeply lobed and jagged; serratures acute; deep green on the surface, light green beneath, smooth. *Flowers* semi-double, of a most intense blue colour, produced very numerously in terminal spikes. *Sepals* of the calyx greenish externally.

WE have pleasure in again directing the attention of our readers to the deeply interesting and important results which have been produced by the practice of hybridization, as illustrated in the splendid plant of which the accompanying figure will convey some idea, but the colours of which it is impossible to imitate successfully upon paper. In a communication to Dr. Lindley, published in the *Botanical Register*, t. 1944, Messrs. Rollison, of Tooting, state—"We received the Delphinium from a friend at Manchester under the name of '*D. Barlowii*,' and we believe it to have been raised by a florist of that name in the neighbourhood of Manchester; undoubtedly it is an hybrid production, and we think the parents to be *D. grandiflorum* and *D. elatum*, partaking in the growth and flowers of the character of both."

From the above extract it will be seen that this remarkably showy plant affords another demonstration of the advantages of hybridizing plants, the colours or habits of which it may appear desirable to combine. Apart, however, from any existing proofs of its utility or efficacy, it is a subject which possesses more than ordinary interest to the inquiring physiologist. To ascertain in what precise manner the fertile organs affect, or are affected by, those of plants with different habits, would be worthy of the most distinguished botanist. We know that certain combinations produce certain results; for instance, that an admixture of two opposite colours will give an intermediate shade, and that, by the cross-fertilization of plants of different habits, a hybrid partaking in some degree of the nature of both parents will be raised; but further than this we are comparatively ignorant, and we should rejoice to see some talented individual devoting his attention to a minute investigation into the laws and process of hybridizing plants.

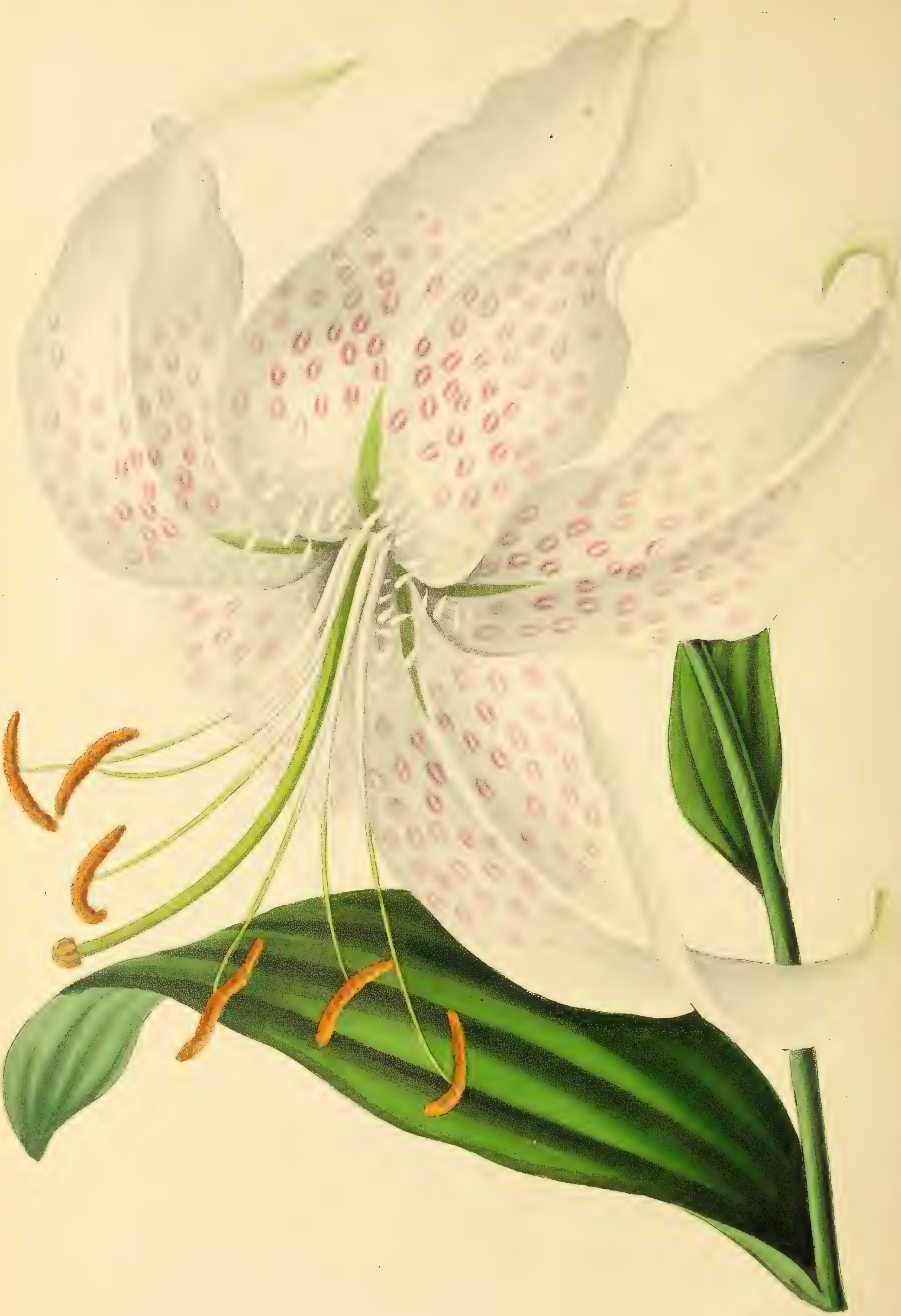
The plant here figured, and which has elicited these remarks, is, without exception, the most strikingly beautiful of the numerous ornamental species and varieties which constitute the genus *Delphinium*;—a genus, we may observe, the species of which are but ill-defined, but yield to no other herbaceous plants in brilliancy of hue, and general showiness of appearance. Cultivators are much indebted to Dr. Lindley for having described and figured many of the most beautiful of them in the recent numbers of the *Botanical Register*; and, as occasion offers, we shall present to our readers drawings of the best and most valuable of the species.

Delphiniums may be classed among those herbaceous plants the cultivation of which requires no particular attention. Our present plant needs only to be sown, and planted where it is desired to flower, to ensure a profuse display of its most attractive blossoms. Support will seldom be necessary, and it is found to flourish in almost any soil. An exposed situation is doubtless preferable, though it will thrive beneath the shelter of trees, or amongst shrubs. Planted in beds or masses, a display of flowers is produced, which, for liveliness, intensity, and richness of colour, is, perhaps, unrivalled. We witnessed a bed of it in full flower in the Tooting nursery during the last and preceding seasons, and its appearance was really magnificent.

It grows usually to the height of two or three, but occasionally exceeds six or seven, feet, and its disposition to branch is not the least valuable feature of its character, since, from the extremity of every lateral shoot, a dense cluster of flowers appears. To add to its value, it is said to flower profusely throughout the whole of the summer and autumnal seasons, frequently maintaining its disposition to bloom until injured by early frosts.

Messrs. Rollison's was the first metropolitan nursery in which it appeared, and our drawing was obtained from thence in the month of July, 1838. From these gentlemen it may now be procured, as well as from most of the leading nurseries throughout the country. No collection, of whatever extent or description, should be destitute of this most superb object. Messrs. Rollison state that it is likewise known under the name of *D. phœniceum.*

The generic name is from the Greek *delphin*, a dolphin, in allusion to the supposed resemblance of the nectary of the plant to the usual figures of that fish. It has received the English designation of Larkspur, from the French *Pied d'Alouette*, on account of the spur of the calyx approximating in form to the posterior talon of the lark.



Lilium lancifolium roseum.

LILIUM LANCIFOLIUM ROSEUM.

(ROSY-SPOTTED LANCE-LEAVED LILY.)

CLASS.
HEXANDRIA.

ORDER.
MONOGYNIA.

NATURAL ORDER.
LILIACEÆ.

GENERIC CHARACTER.—See vol. v. p. 1.

SPECIFIC CHARACTER.—*Stem* angular, hairy, erect, simple, a foot or more high. *Leaves* alternate, sessile, lanceolate, smooth, shortening by degrees as they approach the summit of the stem. *Corolla* small, white.

Var. ROSEUM.—*Stem* growing from three to four feet high, erect, branching horizontally at the summit. *Leaves* sessile, ovate-lanceolate, slightly reflexed. *Perianth* of five nearly equal segments; segments large, broadly oblong, recurved, wavy at their margins, of a delicate white, beautifully spotted and blotched with rose colour, and with a stripe of green towards their base. *Stamens* prominent, partially pendent, with large orange-coloured anthers. *Style* longer and stronger than the stamens, inclining upwards towards the extremity.

SYNONYME.—*Lilium lancifolium punctatum.*

IN the exquisite loveliness of its flowers, their superior size, and the stronger and more robust habits of the plant, this charming variety almost outvies the splendid species (*L. speciosum*) of which a figure was given in the first number of the present volume of our Magazine. The dazzling brilliancy of hue for which the species just mentioned is so deservedly admired, alone maintains its ascendancy, for in every other respect our present subject is decidedly unequalled.

Among the many beautiful and valuable plants introduced to this country from Japan through the researches of Dr. Siebold, perhaps none can be compared with these truly magnificent lilies. Indeed, we scarcely think there is exaggeration in the statement, that they are unsurpassed by any plant previously known and cultivated in Britain. The variety now figured commands especial attention on account of the large size of its flowers. These, it will be seen, are much more expansive than those of *L. speciosum*, and the plant is altogether of a much larger and stronger habit of growth. Besides these differences, however, the segments of the perianth of *L. speciosum* are much more recurved at both extremities, forming quite a hollow cup in the centre of the flower, and folding back so as almost to touch each other; the little projections with which the centre of the flower is studded are also red, instead of white; and the colour of the anthers is brown, those of the present plant being orange-coloured.

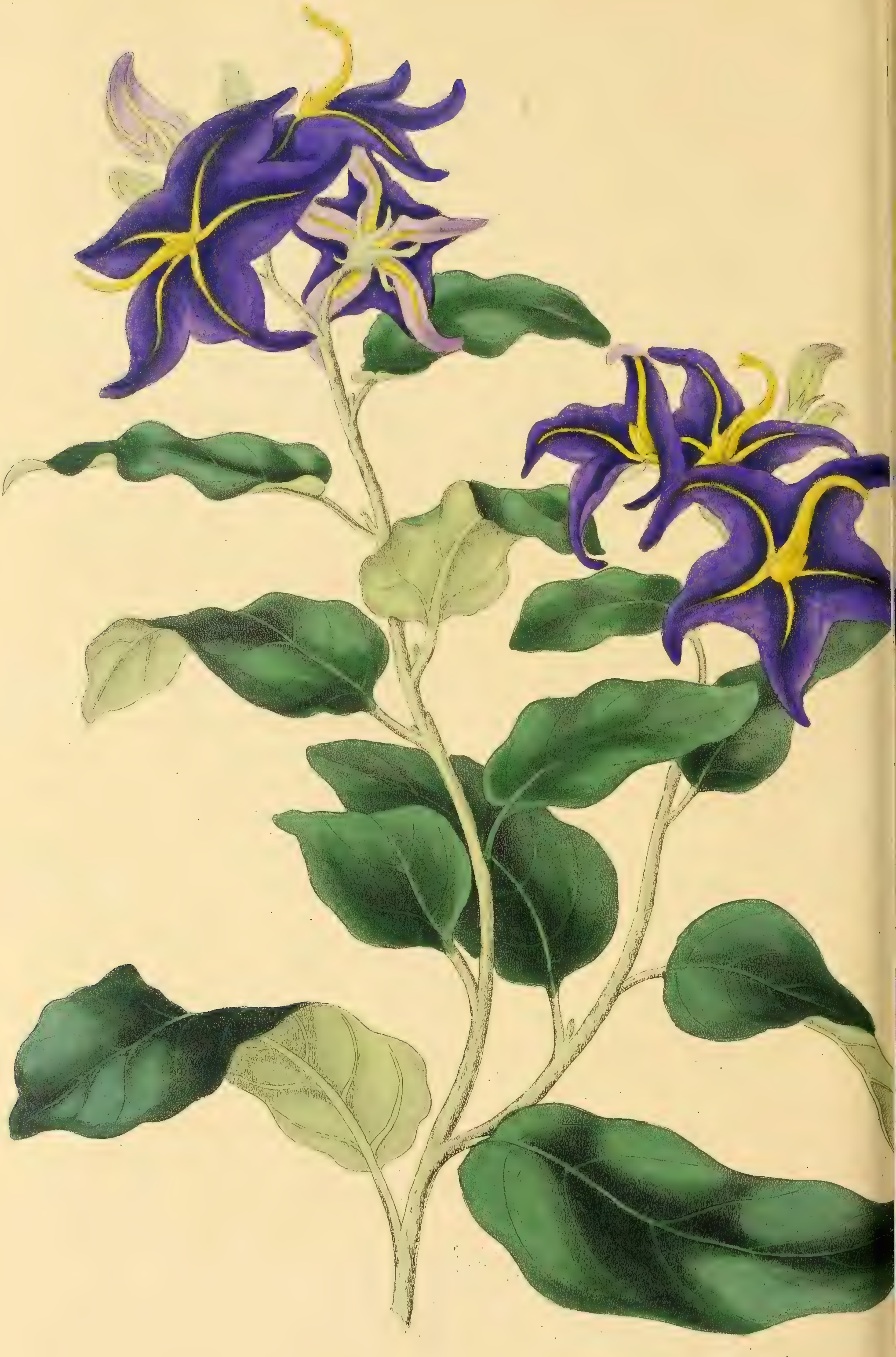
Unfortunately for the science of botany, and particularly so for the cultivators of beautiful plants, the lilies sent home by Dr. Siebold have, like many other plants, been strangely confounded by the application of several names to one plant. *L. speciosum* was long called *L. lancifolium rubrum*, and *roseum*, previously to the establishment of its present designation by Dr. Lindley; and the one here figured has by many been considered identical with that species, owing to the same appellations having been indiscriminately applied to them both. To preserve a distinction, our present plant has received the name of *L. lancifolium punctatum* from some of the Continental horticulturists, which has, in a great measure, tended to increase the confusion.

That these impediments to the knowledge and distribution of this variety may no longer exist, at least in this country, we propose retaining the name now applied to it, as being much more expressive of the character of the plant than the one above alluded to, since the term "*punctatum*" is quite as applicable to *L. lancifolium album* as to the plant here noticed; and although the name thus selected may have been used as a synonyme to *L. speciosum*, that cannot now be the case, since the latter plant has been specifically distinguished.

In the cultivation of this delightful plant, the same system of treatment should be pursued as has been recommended for *L. speciosum* in a former number of this volume. An exposed situation in the border of a greenhouse is found decidedly preferable to confinement in a pot; though the latter system possesses some advantages, as by it the plant can be more easily kept in a dry and dormant state during the winter months. Under no treatment, however, will its flowers be exhibited in their true character, unless it be abundantly supplied with solar light, from the period of its first appearance above the soil, till the flowers commence expanding; and the importance of placing it in a situation where this potent principle can be freely imbibed, cannot be too strongly insisted upon. It is probable that the application of manure water in the early stages of its progress might have a beneficial effect; at all events, water should be liberally administered during this period, though this must always be proportioned to the supply of light.

Some remarks on its propagation are inserted in page 273 of this number.

Messrs. Low & Co., of the Clapton nursery, kindly permitted our artist to take a drawing of this valuable plant, and informed us that, when in flower, it emits a most delicious fragrance. It blossomed in the greenhouse of these gentlemen in the month of August, 1838.



Solanum Herbertiana.

SOLANUM HERBERTIANUM.

(MR. HERBERT'S NIGHTSHADE.)

CLASS.	ORDER.
PENTANDRIA.	MONOGYNIA.

NATURAL ORDER.

SOLANACEÆ.

GENERIC CHARACTER.—See vol. iii. p. 1.

SPECIFIC CHARACTER.—*Plant* shrubby, evergreen, growing from two to three feet in height, and upwards. *Stem* nearly erect, much branched, covered with a ferruginous pubescence. *Leaves* petiolate, ovately oblong, bluntish, deep green above, clothed with brownish pubescence beneath, slightly undulated at the margins. *Calyx* five-parted; segments linear, green, alternate with the divisions of the corolla. *Flowers* large, terminal, deep purple, with a yellow streak down the centre of each division. *Corolla* rotate, monopetalous, deeply five-lobed; lobes broad at the base, tapering gradually to an obtuse extremity, slightly recurved. *Stamens* collected round the mouth of the corolla. *Style* as long as the segments of the corolla, reclining on them, and curving upwards, towards its extremity.

ONE of the most ornamental, and consequently the most valuable, species of the genus. Blue is evidently the predominant colour of Solanums; but there are few species in which it assumes such an intensity and brilliancy as the one now for the first time figured. Rarely, also, do their flowers attain so large a size as those of our present plant; and these circumstances combined, impress it with a superior character, and render it a desirable acquisition to any collection.

While excessive luxuriance, very frequently amounting to coarseness, characterises most of its allies, this beautiful species is remarkable for its dwarf and peculiarly neat habits. Seldom growing more than two or three feet high, being moreover of a shrubby nature, and flowering most abundantly when its stems are not more than six or nine inches in length, it is admirably adapted for placing on a stage in a conspicuous situation. It must not however be too much elevated, as its flowers require to be examined from above, in order to obtain a full perception of their beauty; the upper surface of the leaves is likewise of the most lively and pleasing colour, since they are covered beneath with a ferruginous pubescence. These circumstances should not be forgotten in choosing for it a position in the plant-house.

Cultivators have hitherto treated it as a stove species, and it is found to thrive best in a humid atmosphere, and a partially shaded situation, but not one which is too much secluded from light. It should not be too closely surrounded by other plants, as this would have the effect of rendering its stems bare and unsightly, and it would not afterwards exhibit itself to advantage in a more exposed part of the house. A light loamy soil, with a slight admixture of heath-mould and sand, will produce a compost, which is undoubtedly the most favourable to the production of flowers; but if the plant is desired to grow larger, or more rapidly and luxuriantly, a richer soil may be employed. If not too freely exposed to solar light, this species will flower much more profusely when only a small quantity of water is applied to the roots, its necessities being supplied in the form of atmospheric moisture, and occasionally by a slight syringing.

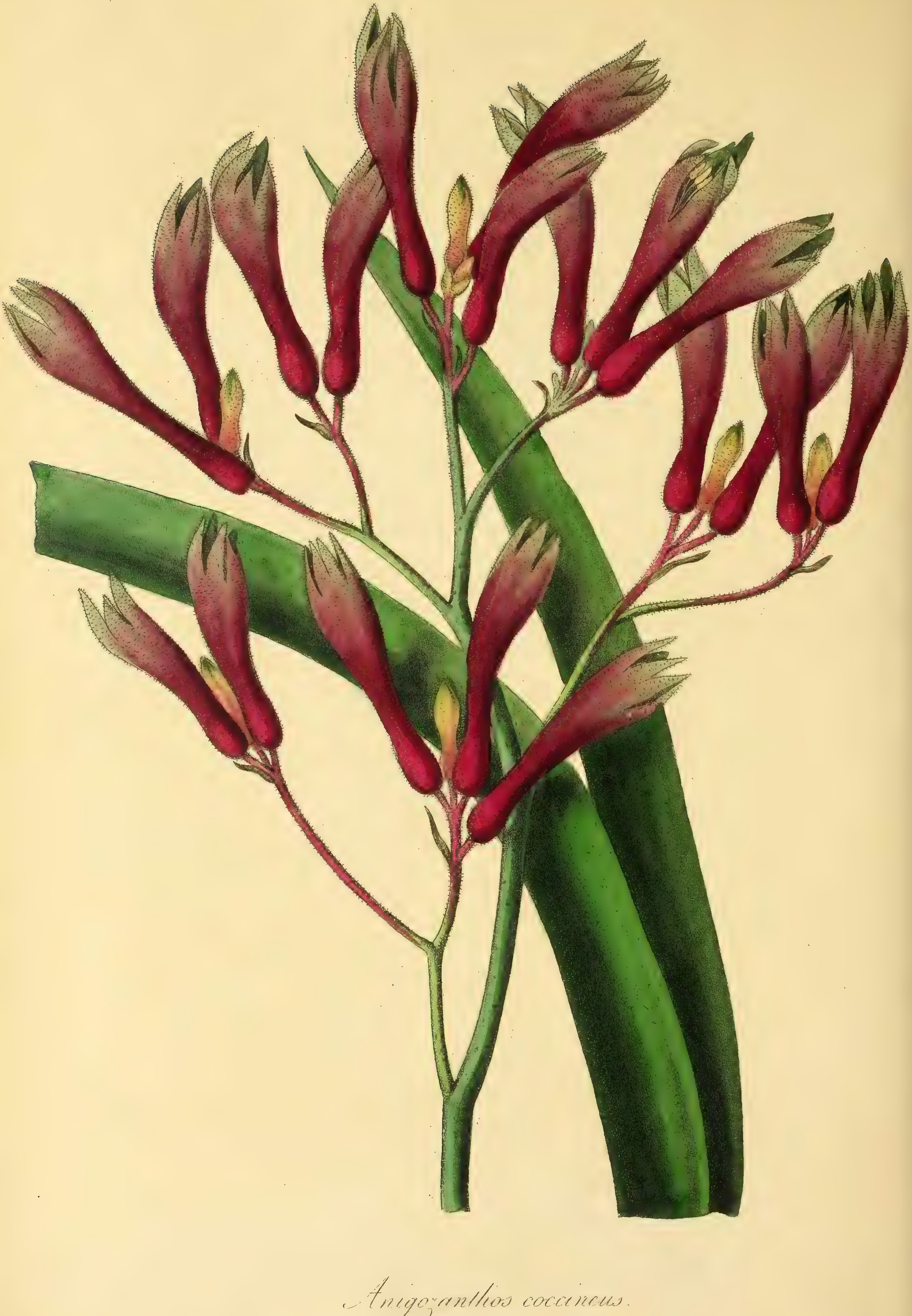
Cuttings root with tolerable facility when planted and treated in the ordinary manner, and they will form flowering plants in little more than a year after striking, if the mode of treatment has been favourable. They require some care in preserving them from injurious dampness, as the wood is naturally of a soft and juicy nature.

It is very questionable whether this plant can be cultivated in the greenhouse, as a high temperature appears essential to the maturation of its shoots and the development of its flowers. These latter we have seen produced at almost all seasons, but the summer months would seem to be the usual period of its flowering.

We are indebted for our drawing to Messrs. Young, of the Epsom Nursery, in whose collection it has existed for several years, and from whom plants of it can be procured.

Of its native country we regret to be compelled to confess our entire ignorance. It has been cultivated in the Epsom nursery during the last five years, but it is not known from whence it was procured. The specific designation has been adopted as being the one by which it is generally known, but we are alike uninformed as to its origin, or to whom it alludes.

The generic name is explained at page 1 of the third volume of this Magazine.



Anigozanthos coccineus.

ANIGOZANTHOS COCCINEUS.

(SCARLET ANIGOZANTHOS.)

CLASS.	ORDER.
HEXANDRIA.	MONOGYNIA.

NATURAL ORDER.

HÆMODORACEÆ.

GENERIC CHARACTER.—*Perianth* superior, coloured, tubular, woolly or hairy; limb six-parted, lobes nearly equal, inclining upwards; slowly deciduous. *Stamens* six, inserted in the mouth of the limb, ascending. *Anthers* erect. *Ovary* three-celled ; cells many-seeded. *Style* filiform, deciduous. *Stigma* simple. *Capsule* three-celled, dehiscing at the summit. *Seeds* numerous.

SPECIFIC CHARACTER.—*Plant* an evergreen herbaceous perennial, growing four or five feet in height. *Leaves* deep green, channelled, linear-lanceolate, acute, from one foot to eighteen inches long, half erect. *Perianth* crimson or scarlet, gradually inclining to green towards its summit, green internally, swelling near the apex, where it is divided into six segments; segments partially reflexed when matured; covered with short hairs.

THE genus Anigozanthos has recently received several accessions from the Swan River colony, through R. Mangles, Esq., of Sunning Hill, Berks, from whose collection so many new and beautiful plants have, within the last few years, been most liberally distributed. Among the most remarkable additions to this genus, is a species, and likewise a variety of another species, with a somewhat unique combination of scarlet and green in the same flowers. In point of beauty, however, the present species stands pre-eminently conspicuous; its showy crimson or scarlet blossoms possessing only a slight tinge of green, and being also rather larger than those of the other species.

The name under which this beautiful plant now appears, is believed to have been originally applied to it by Dr. Lindley, and is peculiarly applicable to the colour of its flowers. This is not a pure scarlet, but a shade apparently intermediate between crimson and scarlet ; and as the term "coccineus" may, without any perversion, be appropriated indiscriminately to flowers of either of these hues, (though most frequently restricted to the latter by botanists,) the character of the present species is thereby fully expressed.

The treatment of this plant may be comprised in a few words. A moderate-sized pot, a light loamy soil, and an abundant supply of water in the summer, with great care in preserving it from unnecessary moisture during the winter season, constitute its principal particulars. It is specially desirable to keep it always in an open situation, where it will not be too closely surrounded or shaded by other plants; as it delights in a full exposure to the solar influences, and is frequently injured by mildew on account of the accumulations of moisture consequent on its being buried, as it were, amongst plants of stronger growth.

Retained in the greenhouse, it will thrive most luxuriantly with the treatment above detailed, and frequently produce flower-stems of from four to five feet in height. These latter branch most profusely towards their summits, and the beautiful flowers are exhibited from the extremities of all the numerous ramifications of the stem, thus forming sometimes a compact head of one foot or more in diameter. Planted in the open ground, however, it would most probably form a most striking object in the summer season, and might easily be removed in a pot to the greenhouse on the approach of winter. We have not yet seen the latter system practised with any of the species; but we certainly think it would prove advantageous, and be the means of greatly increasing their interest.

It has been found impossible to exhibit, in a drawing on our present scale, the manner in which the leaves of this plant are produced, and to those acquainted with the genus this would be wholly unnecessary. To such as are not conversant with the old species, it will be sufficient to observe that they spring from the roots in the same manner as the herbaceous species of *Yucca*, or the common pine-apple plant.

Seeds either produced here, or procured from its native country, will vegetate freely in a sandy soil, if sown in shallow pans, and kept in a gentle hotbed, or in even a cold frame. The heat which they require must be regulated according to the season of the year. Thus, if sown in the spring, (which is the best time,) they will not need any stimulus of that kind; but if the sowing is effected late in the autumn, or during the winter, a slight heat will be necessary. The more usual method of propagation is, by division of the plant into as many portions as there are shoots, or merely detaching such of the external ones as may be required. This may be practised immediately after the flowers have faded, and the young offsets will speedily form new roots, if planted in sand, or a sandy loam; indeed, where sufficient roots are possessed, they may be at once potted in the usual manner.

The drawing was taken in the nursery of Messrs. Low & Co., Clapton, in July, 1838, the species flowering continually from June to August.

The genus was named from *anischo*, I raise up, and *anthos*, a flower, according to Dr. Lindley; but Mr. Loudon derives the former part of it from *anoigo*, to expand. It is difficult to say how the former can apply; but the latter may allude to the expansive property of the segments of the perianth during fine weather, and when fully matured.

FLORICULTURAL NOTICES.

Lilium speciosum.—This superb plant and its allies have unquestionably been the most attractive objects in the London nurseries during the late season. We allude more particularly to the one figured in another part of the present number, and *L. lancifolium album*, though the latter is by far the least beautiful of the three. On account of their extreme scarcity, they have hitherto been cultivated only in the greenhouse, and no attempts have, we believe, been made to grow them in the open air. Little doubt, however, can be entertained that they would thrive well in such a situation during the summer months, as so many of the plants introduced from the same country have been found to succeed in the open ground, with a trifling protection in the winter; but the trial must be made with all due precaution. Should they prove capable of enduring such treatment, its effect would doubtless be to enhance their beauty, for a full exposure to the solar influences could not fail of producing favourable results.

In confirmation of this opinion, we may mention a remarkable variation in the colour of the flowers of *L. speciosum*, which occurred in several instances during the last summer. We saw plants of this species in flower in 1837, and the same specimens bloomed most profusely in 1838. In the latter season, the colours of the flowers were so much paler, that it was considered identical with *L. lancifolium roseum* by many who had only made a cursory examination of the last-named plant. The cause of this difference may evidently be traced to the general obscuration of the sun during the summer of 1838, and to the plants having been kept at a pretty considerable distance from the glass; so that, if this inference is correct, the advantages of complete exposure may be considered as demonstrated.

The principal reason why these beautiful plants remain so scarce, appears to be the great difficulty which attends their propagation. To remove this obstacle, we shall now describe the system practised in many of the principal metropolitan nurseries. A bulb of the sort which it is desired to propagate being obtained, it is taken from the pot while in a dormant state, but just before the period at which it begins to grow, a number of the external scales are carefully removed, and the bulb returned to its original position. These scales, or cloves, are then planted separately into small pots, in a light soil, and the pots plunged in a slight bottom heat. They must be sparingly watered with lukewarm water, and after a short period, they should be examined, when a number of small bulbs will be found to have formed around the base of the clove. These may be carefully detached when about the size of peas, if they are not sufficiently numerous, in which case others will subsequently be formed; but if a great quantity is not desired, they may be allowed to remain on the parent till they are somewhat more advanced. With careful potting, and judicious attention, all these young bulbs will ultimately form flowering plants; and, by means of the adoption of this practice, we hope soon to see these delightful objects in the garden of every admirer of lilies.

OPERATIONS FOR JANUARY.

Christmas is invariably considered the annual precursor of frost and other rigours to which our northern climate is accustomed, and seldom are these predictions unfounded. Now, therefore, the flues and furnaces of plant-houses should be tested, and held in readiness, (if not hitherto required,) that they may not be found deranged or ineffective, should a sudden change in the weather render their employment necessary. In the open ground, likewise, on account of the large quantities of rain which have fallen within the last three months, preparations should be made for sheltering every valuable plant in a case of emergency, as the saturated state of the soil will give increased effect to an attack of frost, and, we fear, if the winter should prove severe, will contribute greatly towards the destruction of all kinds of vegetable productions.

All exotic plants require, at this season, as much light as can possibly be dispensed to them, and as little water as will suffice to keep them alive. Orchidaceæ and other tropical kinds, need little further attention than that which is necessarily bestowed on the regulation of temperature, which should be kept, as far as practicable, uniformly low. The smaller and more tender sorts should occasionally be very attentively examined, lest, from the prevalence of moisture, they suddenly perish; for, if the process of decay from this cause be once allowed to commence, it is difficult to check its progress, and the only effectual remedy is an immediate amputation of the part affected; or, if this is impracticable, some slacked lime should be applied to the diseased part as soon as it is detected. Plants of a succulent nature are peculiarly liable to injury from this source, and the species of Stapelia especially so. As prevention is always preferable to reparation, a low temperature and dry atmosphere will be found unfailing antidotes to this most prevalent and destructive disease; for, in no case where these have been properly attended to, has it ever been observed.

In extreme frost, when, from accidental causes or an inefficient command of heat, great difficulty is experienced in counteracting its effects, or preserving plants from injury, it has been found useful to burn a number of lamps as near to the roof as consists with safety, the heat diffused from which has, in many cases, alone been sufficient to prevent the ingress of frost. To render this experiment effectual, it is necessary to cover up the front and sides of the house with mats, and leave only the roof exposed. Its success may be easily accounted for. It is well known that heated vapour invariably ascends; so that by arranging its sources in the upper part of the house, a constant volume of it is maintained near the roof; and as frost can only enter through the latter medium, when all other inlets are secured, the heated air thus interposed between the roof and the plants effectually preserves the latter by excluding the former. Want of space prevents us from elaborating this subject; we therefore merely suggest it, and shall revert to it on a future occasion.

In the flower-garden, digging, planting, and pruning, may be continued in favourable weather, and every protection afforded to all plants requiring it. Further directions will be found in our last number, which are equally applicable to the present month.

INDEX.

A.

ABSORPTION, process of, explained, 86
Acarius Tellarius, means for destroying, 71
Aconitum chinense, 3
Æschynanthus grandiflorus, culture and habits of, 241
Agave Americana, means of inducing it to flower, 135
Air, directions for admitting it into plant houses, 96, 168, 192, 216, 240
Alpine plants, natural habits of, 230 ; culture of, 230
Amancaes, Mr. M'Lean's, 210
Amaryllises, preparations for forcing, 216
American aloe, suggestions for flowering the, 135
American cowslip, entire-leaved, 16
Amphicome arguta, 90, 189
Andromeda floribunda, its hardihood, 94
Anemones, planting, 24, 48
Angelonia salicariæfolia, natural habits of, 75 ; culture of, 76
Angræcum gladiifolium, 188
Anigozanthos coccineus, 271
Anise-seed tree, Florida, 147
Anneslea tomentosa, 259
Annuals, sowing tender and hardy, 24, 48 ; sowing, for flowering in the autumn and spring, 120, 144, 168, 192 ; thinning and transplanting, 48, 96 ; importance of timely supporting, 120
Anæctochilus setaceus, 16
Anomatheca cruenta, planting roots of, 48
Antirrhinum majus caryophylloides, 55
— — trionithophorum, 235
Anthrocercis viscosa, beneficial effects produced on, by planting out, 214
Aotus ericoides, culture of, 51
Aphelandra cristata, 236
Aquatic, treatment of Calla Æthiopica as an, 226
Aristolochia hyperborea, 187
— saccata, 65
Arthrostemma versicolor, 209
Asarum japonicum, 93
Aspasia epidendroides, 163
— variegata, 140
Astelma eximium, culture of, 104
Auriculas, top-dressing, 24 ; dividing the roots of, 72
Azalea Danielsii, 117
— littoræa, 140
— indica Smithii, 67, 91
— indica variegata, 119
Azaleas, importance of watering freely, 72 ; hints on forcing, 216 ; propagation of hybrid, 142 ; advantages of grafting, 142

B.

Balsams, treatment of, 120
Banksias, care necessary in watering, 24 ; great degree of light required for, 181
Barren-wort, large-flowered, 151 ; violet-flowered, 123
Bartonia aurea, 141
Batemannia Colleyii, 67
Begonia odorata, 69
Begonias, great quantity of water requisite for, 95
Bell-flower, dark-blue bearded, 16
Biennials, time for sowing, 192
Birthwort, pouch-flowered, 65
Bletia, distinction of the genus, from Phaius, 126
Boiler, diagrams and description of an oval, 39
Boilers, remarks on the construction of, 63
Bolbophyllum bracteolatum, 235
Botanical Lexicon, review of a, 86
Brunsfelsia americana deciduous in a low temperature, 252
Buddlea madagascariensis, 260
Bulbs, management of stove, 119
— change of soil useful to, 208
— preparation of beds for hardy, 216
— time for planting hardy, 240
— remarks on forcing, 216
— mode of treating exotic, 250
— protection for hardy, 264
Burlingtonia candida, 237
Butterfly plant, 175
Butterfly plant, the Indian, 162.

C.

Cactaceous plants multiplied by seed, 232
Cactæ, hints on grafting, 23, 69 ; propagation of the spherical-headed kinds of, 70 ; directions for sowing seed of, 232 ; natural habitats of, 132 ; an intense degree of light necessary for, 133

Calla Æthiopica, culture of, 225 ; treated as an aquatic, 226
Callionema pulchra, 139
Callistemon microstachyum, 42
Camellia picturata, 68
— Pressii rosea, 171
Camellias, house most suitable for, 180 ; injured by too great exposure to solar light, 179 ; general management of, 72, 95, 144 ; remarkable display of, 92
Campanula barbata ; *var.* cyanea, 16
— pyramidalis, mode of multiplying, 72
Canvas useful for shading heaths, 157
Cape bulbs, time for potting, 240
Capsicum ustulatum, 197
— culture of the genus, 197
Carica citriformis, 43
Catasetum, singular fact respecting the late genus, 258
— atratum, 258
Cattleya crispa, 5
— Mossiæ, 187, 259
— Perrinii, 18
— pumila, 139
— culture of the genus, 5 ; temperature most suitable for the genus, 83
Centaurea depressa, 161
Centaury, prostrate, 161
Cereus pentalophus ; *var.* subarticulatus, 115
— speciosissimus, exposure useful to, 134
— speciosus and Jenkinsonii, beneficial effects of exposure upon, 134
Chelone barbata alba, 139
— Mexicana, 212
Chemistry of nature, 11
Chilodia scutellarioides, culture of, 195
China roses, propagation of, 72, 120
Chinese Aconite, 3
Chorizema cordata, 42, 68, 97
— scorpioides, 93
Chrysanthemums, propagation of, 120 ; planting out, 144
Chysis aurea, 140
Cineraria, the king, 92
Cinerarias, hybrid, 19
Cinquefoil, rusty-brown flowered, 223
Cirrhopetalum Thouarsii, 44
Clematis cærulea, 119
— cærulea grandiflora, 93
— Sieboldii, 119
Clianthus puniceus, cultivation of, 108 ; to be treated as a conservatory plant, 110
Climate, its influence on plants, 110, 131, 155, 179, 203
Climbing stove plants, shading requisite for, 113
Clintonia pulchella, 139
Cœlogyne fuliginosa, 237
— Gardneriana, 20
— maculata, 257
Coffæa not injured by a low temperature, 252
Colours, solar light the cause of, 182
Comesperma gracilis, 93, 145
Conservatory plants, hints on planting, 181
Corræa speciosa grandiflora, 20
Coryanthes macrantha, 31 ; culture and propagation of, 32
Corycium orobanchoides, 186
Cosmus scabiosoides, 66
— tenuifolius, 15
Cratægus glabra, dimensions of a naturalized plant of, 12
Crowea saligna, 260
Crucianella stylosa, 212, 233
Curcuma Roscoeana, 260
Cuttings, excellent mode of striking, 178
Cyanotis axillaris, 260
Cycnoches chlorochilum, 260
Cymbidium triste, 91
Cyrtochilum bigtonense, 188
— maculatum, 93, 186
Cytisus nubiginensis, 260
— racemosus, 93
— rhodaphne, 117

D.

Dahlias, time for planting, 120 ; attention required to, 144, 168, 216, 264
Darkness, its effects on plants, 112
Day Lily, Dr. Siebold's, 25
Decomposition of vegetables, 11
Delphinium Barlowii, 265
— intermedium ; *var.* sapphirinum, 233
Dendrobium aggregatum, 66, 92
— amplum, 237
— aureum, 92
— densiflorum, 121
— fimbriatum, 67
— Gibsonii, 169, 211
— moschatum, 140
— nobile, 67, 92
— secundum, 92
Dendrobiums, culture of, 121 ; season of rest requisite for, 122 ; high temperature essential to, 83 ; natural habits of, 122
Deterioration of soil, its causes, 206
Deutzia scabra perfectly hardy, 95
Dianthus Bisignani, 138
Digging, advantages of frequent, 239
Dodecatheon integrifolium, 16
Double pots recommended for particular kinds of plants, 177
Drymonia bicolor, 18

E.

Earwigs, means for entrapping them on dahlias, 192
Echinacea Dicksonii, 116
Echinocactus Eyriesii ; *var.* glaucus, 138
— tubiflorus, 17
— grafting the species of, 23, 69
Echium giganteum, culture of, 149
Enkianthus quinqueflorus, 127
— reticulatus, culture of, 127
Epacris microphylla, 138
Epidendrum bicornutum, culture of, 246
— floribundum, 44

Epidendrum ionosma, 118, 164
— papillosum, 18
— Schomburgkii, 234
— tenuiflorum, 212
— tesselatum, 66
— viridi-purpureum, 162
Epimedium macranthum, culture of, 152
— violaceum, 68, 123
Erica chloroma, 65
— florida; *var.* campanulata, 65
Erica, shading beneficial to the genus, 156; native localities of many of the species of, 156; causes of ill success in the cultivation of the genus, 156, 204; a separate house requisite for the genus, 156
Euphorbia Jacquiniflora, 185
— rigida, 185
— veneta, 42
Euryale, characteristics of the genus, 47
Eutoca Wrangeliana, 117, 187, 199; culture of, 200
Evergreen plants, importance of light for, in the winter season, 250
Everlasting flowers, remarks on, 247
Excrementitious slime exuded from the roots of plants, 206
Exotic plants, advantages of devoting attention only to one or two kinds of, 182; importance of commencing to protect them early in the autumn, 251

F.

Ferraria azurea, 187
Fig tree, remarkable effects of sudden exposure on a, 203
Fire heat during the winter months, 192, 252, 263
Fires without smoke, 13, 80
Flints available in the formation of rockeries, 229
Flower-gardens and their ornaments, 136, 254
— designs for, 136, 254; hints on the plants most suitable for, and their preparation, 255
Flowerpot, an improved kind of, 177
Flowers, solar light inimical to expanded, 183, 204
Flower-vase, design for a cast-iron, 64
Forcing flowers, time for commencing, 216; exposure to light necessary to plants intended for forcing, 192
Fountains, remarks on, 9
Frames, management of, 264
Frost, importance of guarding against autumnal, 215
Fuchsia arborea, dimensions of, in the open air, 12
— fulgens, 17, 164; culture of, 222
— method of protecting the genus, in the open ground, 251
Funckia albo-marginata, 139, 211
— Sieboldiana, 162
Furnaces, hints on the formation of, 62; remarks on the management of, 264

G.

Galphimia glauca, 236
Gardenia radicans and florida, successful method of cultivating, 105
Gardening, pleasures of, 153
Garden ornaments, 19, 40
Gardoquia multiflora, 210
Gas-stoves, their applicability to horticultural purposes, 80
Genista monosperma, 21
Gesneria faucialis, 117
— oblongata, 259
— reflexa, 92, 117
— rupestris, 53, 187
— verticillata, 118
Gladiolus Mortonius, 210
Glass, refraction of light by, 205
Gloxinia maxima, 219
Gloxinias, practice of hybridizing, recommended, 219
Gompholobium polymorphum, 118
Govenia liliacea, 66
Grafting Azaleas, advantages of, 142
Grafting Cactæ recommended, 23, 69
Greenhouse and greenhouse plants, general management of, 24, 48, 72, 95, 119, 144, 169, 192, 216, 239, 263
Greenhouse plants, time for potting, 48; varied effects of light upon, 155; advantages of dividing a collection of, according to their habits, 180, 182; benefited by a removal to the open ground in the summer months, 213
Grottoes, directions for forming, 230

H.

Half-hardy plants, propagation of, 168, 255
Hakea florida grown in the open air, 12
— saligna, naturalization of, 12
Heartseases, practice of washing the roots of, 207
Heat, means of economising, 13, 80, 253, 274
Heath, drooping round-headed, 65
— green-tipped, 65
Heaths, a separate house advantageous to, 156; causes of ill success in the cultivation of, 156, 204; method of renovating sickly plants of, 215
Hellebore, Corsican, 233
Helleborus lividus, 233
Helichrysum macranthum, 141, 164, 247, 257, 260; culture of, 248
Hemerocallis Sieboldii, 25
Herbaceous plants, directions for supporting, 96
Hibiscus lilacinus, 15
Hippeastrum ambiguum longiflorum, 165
Hot water, its advantages over steam in heating plant houses, 57
Hot-water apparatus, management of, 58
Hot-water pipes, most suitable size for, 60
Hovea Manglesii, 257
Hybridization, remarks on, 219
Hydrangeas, hints on watering, 120
Hymenæa Courbaril, 236

I.

Illicium floridanum, culture of, 147
Impatiens scapiflora, 101, 238
Improvements in gardens, advantages of designing them in the early part of the autumn, 191
Insects which infest stove plants, modes of destroying them, 71
Ionopsis utricularioides, 211
Ipomæa bonariensis, 161
— Platensis, 234
Iron inferior to wood for the roofs of plant houses, 34
Ismene Macleana, 210

J.

Jasmine, privet-leaved, 15
Jasminum glaucum, 15

K.

Kalmias, directions for forcing, 216
Kennedia glaberata, 92

L.

Larkspur, sapphire blue variable, 233
— Mr. Barlow's, 265
Laurus indica, dimensions of a naturalized plant of, 12
Layering shurbs, directions for, 240
Leaves, an abundance of them an indication of the necessity of a large supply of solar light, 112
Lebretonia, close proximity of the genus to Pavonia, 256
Leucothoe floribunda, remarks on the hardihood of, 94
Liatris borealis, 27
Light, its influence on plants, 110, 131, 155, 179, 203
Lilium aurantiacum, 189
— lancifolium album, 188
— roseum, 188, 267; culture of, 267
— speciosum, culture of, 1; propagation of, 273
Lisianthus Russelianus, 17, 189, 260
Lissochilus parviflorus, 68
Loasa lateritia, 42, 77, 118; culture of, 78
Lobelia Bridgesii, 185
— Cavanillesii, 118
— Drummondii, 238
— fenestralis, 210
— heterophylla, 15, 238
Lœlia anceps, 20
— anceps Barkeriana, 21
— autumnalis, 236
Lœligia ornata, 92
Lophospermum scandens, 63, 259
Luculia gratissima, treatment of, 21

M.

Malva Towardii, 141, 235
Mammillaria atrata, 65
— floribunda, 90
— Lehmannii, 43
— tenuis, 90
Mammillarias, mode of grafting, 23, 69
Manure, means for dispensing with, 239
Masdevallia infracta, 117
Maxillaria aurea-fulva, 18
— graminea, 163
— Rollisonii, 186, 260
— Stapelioides, 163
— tenuifolia, 141
Meadow-sweet, bearded, 15
Melocactus depressus, 256
Mentzelia stipitata, 119
Merendera caucasica, 258
Mesembryanthemums, directions for planting out, 120; general remarks on the cultivation of, 129; great degree of light necessary for, 134
Mildew, causes of, and means for removing, on heaths, 158
Miltonia candida, 236
— spectabilis, 164
Miscellaneous greenhouse plants, remarks on the construction of a house for, 181
Moisture, consequences of a superabundance of, to plants, 207
Monochanthus, singular facts respecting the late genus, 258
Morna nivea, 42
Mucuna pruriens, 89, 119
Myanthus, curious particulars connected with the late genus, 258

N.

Natural habits of plants, importance of ascertaining and studying the, 113
Naturalizing plants, method of, 12
Nemesia floribunda, 161
Nemophila atomaria, culture of, 100
New and rare plants which have flowered in the principal nurseries in the vicinity of London, 19, 67, 91, 117, 139, 163, 187, 211, 235, 259
New Holland plants, mode of naturalizing, 12
Nuttallia grandiflora, 165, 217, 235; culture of, 236

O.

Oak-tree, curious circumstance respecting an, 10
Observation, great importance of, 204
Oncidium Henchmannii, 20, 237
— Lanceanum, 163, 237
— papilio, culture of, 176
— pulchellum, 164
— ramosum, 68
— raniferum, 210, 237
— Russelianum, 259
Oncidium, low temperature preferable for the genus, 83
Operations for January, 274; February, 24; March, 47; April, 71; May, 95; June,

119; July, 143; August, 167; September, 191; October, 215; November, 239; December, 263
Opuntia, singular fact relative to the genus, 132
Opuntia vulgaris, means of fruiting, 133
Orangeries, hints on the construction of, 158
Orange trees, advantages of washing the roots of, 207; degree of light necessary for, considered, 158
Orchidaceæ, preparations for potting, 24; potting, 47; hints on the general management of, 95, 119, 144, 168, 192, 239, 274; indiscriminate treatment of, prejudicial, 85; importance of having two or more houses for, 82; means for improving their cultivation, 85
Orchidaceous house, remarks on a method of suspending plants from the roof of the, 262

P.

Pachypodium tuberosum, 68
Papaw, citron-fruited, 43
Passiflora Kermesina and Loudoniana, culture of, 261
— Loudoniana, 117
— nigelliflora, 43
— onychina, 90
— Tucumanensis, 43
Passion-flower, large-stipuled, 43
— Lieutenant Sullivan's, 90
— nigella-flowered, 43
Pelargoniums, full exposure to light necessary for, at certain periods of their growth, 181; general management of, 96, 144, 168, 216
Pentstemon Cobæa, 163
— crassifolius, 66
— gentianoides, 138
— Murrayanus, winter treatment of, 22
Perennials, collecting and sowing seed of, 192; benefited by yearly transplantation, 207
Petunias, propagation of, 168
Phaius albus, 125, 139; natural habitats of, 125; culture of, 159
— distinction of the genus from Bletia, 126
Phalænopsis amabile, 20, 69, 93, 162, 164
Philibertia grandiflora, 141
Phlox Youngii, 259
Physiological botany, great utility of a knowledge of, 113
Physostegia imbricata, culture of, 174
Pimelea incana, 116
Pits and frames, management of, 264; most suitable for forcing plants into flower, 216
Plants, influence of climate upon, 110, 131, 155, 179, 203; importance of studying the natural habits of, 111; effects of sudden exposure on exotic, 203
Platystemon californicum, 141
Pleasures of gardening, 153
Porcupine cactus, glaucous sweet-scented, 138
Porous plants require little light, 113
Potentilla ferruginea, 223
— glabra, 209
— Tonguii, 187
Potting plants, soils used by nurserymen in, 183; important principles to be attended to in, 208
Pots, improved kind of, 177; those employed by nurserymen usually too small, 184
Propagation of tender plants, 48, 168, 255
Protecting plants in the winter season, modes of, 249, 263
Protecting tent, strictures on a, 249
Pseudo-bulb, definition of the term, 245
Psidium Cattleyanum, low temperature not injurious to, 252

R.

Rehmannia chinensis, 116
Rejections of plants, 206
Renanthera coccinea, 164
Resins, their presence in plants an indication of a great degree of light being required, 112
Rest necessary for exotic plants, 215, 239
Rhodanthe Manglesii, culture of, 201
Rhododendron albiflorum, 185
— Cunninghamii, 69
— guttatum, 118
— hybrid, 67
Rhododendrons, watering, 96; collecting seed of, 254; shaded situation necessary for, 180; house most suitable for the tender species of, 180
Ribes, directions for propagating the various species of, 72, 264
Richardia Æthiopica, culture of, 225
Rockeries suitable for mesembryanthemums, 130
— remarks on the formation of, 227
Roella elegans, 165, 260
Roofs of plant structures, materials most suitable for the, 34
Roots of tender plants, importance of protecting the, 263
Roses, suggestions on pruning, 240; propagation of China, 72, 120
Roxburghia viridis, 117
Rudbeckia Drummondii, 189

S.

Saccolabium præmorsum, 140
Salvia canescens, 161
— patens, 212, 236
Science of gardening, interest attached to the study of the, 154
Sedum Sieboldii, 187
Seed, directions for collecting and preserving, 167; light necessary to mature, 183
Shells an ornamental feature in rock-work, 229
Shelter, different modes of applying, 263; necessary for alpine plants, 230
Shifting plants, remarks on, 109
Shrubberies, hints respecting, 7
Shrubs, season for pruning, 240; time for planting, 264
Siphocampylus bicolor, 163
Smoke, means for consuming, 81

Snails very destructive to Clianthus puniceus, 108
Snow, protection afforded to plants by, 230; temperature of, 230
Soils, importance of turning them frequently, 239
— hints on burning, 209; exposure to the air useful for destroying extraneous matters in, 208; used by nurserymen in potting plants, 183
Solanum campanulatum, 186
— fragrans, 234
— Herbertianum, 269
Spathodea pentandra, 234
Sphenogyne speciosa, 189
Spine cactus, tube-flowered, 17
Spiræa barbata, 15
Stanhopea quadricornis, 18
— Wardii, 211
Stapelia, effects of an insufficiency of solar light upon the genus, 132
Statice arborea, 93, 118; propagation and culture of, 189
Steam, combustible energy of, 253
Stenia pallida, 91
Sternbergia colchiflora, 16
Stevia fascicularis, 257
Streptocarpus Rexii, light injurious to the flowers of, 204
Stove and stove plants, general management of the, 24, 47, 72, 95, 119, 144, 168, 192, 216, 239, 263
Stove, remarks on Dr. Arnott's, 253
— plants, agency of light upon, practically considered, 113; importance of having two houses for the cultivation of, 114
Succulent plants, influence of light upon, 132
Sun dial, design for a, 40
Sun's rays the source of all colour in vegetation, 182
Syringa Josikeii, 140

T.

Telopea speciosissima, 73; causes of failure in the cultivation of, and directions for its management, 73
Temperature, equability of, 80; most congenial to exotic plants in the winter months, 192, 215, 252, 263
Tender plants, time for planting, in the flower-garden, 96; season for protecting, 240; different methods of sheltering, 263
Thysanotus proliferus, 43
Touch-me-not, stemless, 101
Top-dressing, utility of, 208
Transpirations of plants, their effects upon other species, 204
Transplanting, importance of shading plants after, 183
Tree-pink, Prince Bisignani's, 138
Tritonia fucata, 162
Tropical climbing plants, natural habits of, 113
Tropæolum Jarrattii, 29
— peregrinum, 211
— tricolorum, methods of improving, 165
— tuberosum, 49; culture of, 50
— novel method of preserving the species of, from drought, 166
Tuberous-rooted plants, advantages of a change of soil for, 208
Tubers of tropæolum tuberosum edible, 50
Tulips, protection of, 72, 264
Tweedia cærulea, 238
— floribunda, 212

V.

Vanda teres, 117, 193
— habits and cultivation of, 194
Vegetables, decomposition of, 11
Ventilation, principles of, 38; its importance in the autumnal months, 216
Verbena araniana, 117
— chamædrifolia superba, 213
— incisa, 17
— Neillii, 213
— teucrioides, 243; culture of, 244
— Tweediana splendens, 188
Verbenas, time for increasing, 168
Vervain, teucrium-like, 243
Victoria Regia, account of, 114
Vinca minor, history and culture of, 8
Viper's Bugloss, gigantic, 149
Vistea lycioides, treated as a hardy plant, 12

W.

Warratah, the, 73
Water, great importance of a free circulation of, 208; an indispensable feature in rockeries, 228
Watering plants, hints on, 95
Wooden roofs preferable to iron for plant houses, 35
Wood-wort, two-coloured, 18, 163

Z.

Zickia molle, 93
Zygopetalum Mackayanum, 186

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